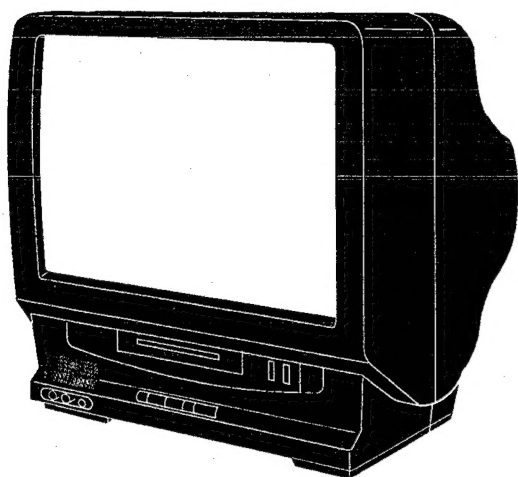


Service Manual

COMBINATION-VCR

Panasonic
Omnivision **VHS**



PV-M1324
PV-M1324W
PV-M2024
PV-M2044

ITEM		SPECIFICATION	1	2	3	ITEM		SPECIFICATION	1	2	3		
VCR	Video	Head : 2 rotary heads helical scanning system 4 rotary heads helical scanning system	○	○	—	VCR	Tape Speed	SP : 1-5/16 i.p.s (33.35mm/sec), LP : 21/32 i.p.s (16.67mm/sec), SLP : 7/16 i.p.s (11.12mm/sec) Record/Playback Time : 8 Hrs with 160min. type tape used in SLP mode FF/REW Time : Less 5min. (120min. type tape)	○	○	○		
		Input Level : VIDEO IN Jack (Phono type) 1.0 Vp-p 75Ω unbalanced Output Level : VIDEO OUT Jack (Phono type) 1.0 Vp-p 75Ω unbalanced Signal-to-Noise Ratio : SP : more than 43dB LP/SLP : more than 41dB Horizontal Resolution : Color/Monochrome : more than 230 lines	○	○	○			Tape Format	Tape width 1/2" (12.7mm) high density tape	○	○	○	
			—	—	○								
		Audio	Head : Normal Mono : 1 stationary head	○	○		○	DISPLAY	Picture Tube	13 inch measured diagonal 90° deflection 20 inch measured diagonal 90° deflection	○	—	—
			Input Level : AUDIO IN Jack (Phono type) - 10dBV 50kΩ unbalanced Output Level : AUDIO OUT Jack (Phono type) - 8dBV 600Ω unbalanced	○	○		○						
	Frequency Response: Normal Mono : SP : 100Hz ~ 8kHz LP : 100Hz ~ 6kHz SLP : 100Hz ~ 5kHz		○	○	○	GENERAL	Power	Source : 120V AC ±10% 60Hz ±0.5% Consumption : 69 watts Consumption : 112 watts	○	○	○		
	Signal-to-Noise Ratio Normal Mono : SP : more than 42dB LP/SLP : more than 40dB		○	○	○								
	Wow and Flutter : Normal Mono : SP : Less than 0.2% WRMS LP : Less than 0.3% WRMS SLP : Less than 0.4% WRMS		○	○	○		Television System	EIA Standard (525 lines, 60 fields) NTSC Color Signal	○	○	○		
	Tuner	Broadcast Channels : VHF 2 ~ 13, UHF 14 ~ 69 CATV Channels : Midband A through I (14 ~ 22) : Superband J through W (23 ~ 36) : Hyperband AA ~ EEE (37 ~ 64) : Lowband A-5 ~ A-1 (95 ~ 99) : Special CATV channel 5A (01) : Ultraband 65 ~ 94, 100 ~ 125	○	○	○	Operating Condition		41°F(5°C) ~ 104°F(40°C) (Temperature) 10% ~ 75% (Humidity)	○	○	○		
					Dimension		14-13/16"(376mm) (W) x 15-7/8"(403mm)(H) x 15-1/8"(384mm) (D) 21-1/8"(536mm) (W) x 21-1/4"(540mm)(H) x 19-3/16"(487mm) (D)	○	—	—			
						Weight	Approx. 29.1lbs (13.2kg) Approx. 52.9lbs (24kg)	○	—	—			

1. PV-M1324/PV-M1324W
2. PV-M2024
3. PV-M2044

Weight and dimensions shown are approximate.
Specifications are subject to change without notice.

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Panasonic®


Summary
Adjustment Procedures
Schematic Diagrams
Circuit Board Diagrams
Exploded Views
Replacement Parts List
Block Diagrams

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PV-M1324W	2
PV-M2024	2
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IMPORTANT SAFETY NOTICE

There are special components used in this equipment which are important for safety. These parts are marked by  in the Schematic Diagrams, Circuit Board Diagrams, Exploded Views and Replacement Parts List. It is essential that these critical parts should be replaced with manufacturer's specified parts to prevent shock, fire or other hazards. Do not modify the original design without permission of manufacturer.

IMPORTANT SAFETY NOTICE

There are special components used in this equipment which are important for safety. These parts are marked by Δ in the Schematic Diagrams, Exploded Views and Replacement Parts List. It is essential that these critical parts should be replaced with manufacturer's specified parts to prevent X-RADIATION, shock, fire, or other hazards. Do not modify the original design without permission of manufacturer.

SAFETY PRECAUTIONS

GENERAL GUIDELINES

1. It is advisable to insert an isolation transformer in the AC supply before servicing.
2. When servicing, observe the original lead dress, especially the lead dress in the high voltage circuits. If a short circuit is found, replace all parts which have been overheated or damaged by the short circuit.
3. After servicing, see to it that all the protective devices such as insulation barriers, insulation papers, shield, and isolation R-C combinations are properly installed.
4. Before turning the receiver on, measure the resistance between B+ line and chassis ground. Connect (-) side of an ohmmeter to the B+ lines, and (+) side to chassis ground. Each line should have more resistance than specified, as follows :

B+ Line	Minimum Resistance
130V	1K ohm (Hot chassis ground)
27V	180 ohms (Cold chassis ground)
17V	110 ohms (Cold chassis ground)
5. When the TV set is not used for a long period of time, unplug the power cord from the AC outlet.
6. Potentials, as high as 25.0KV : Model A, B, C, D or 30.0KV : Model E, F, G, H (see chart above) are present when this TV set is in operation. Operation of the TV set without the rear cover involves the danger of a shock hazard from the TV set power supply. Servicing should not be attempted by anyone who is not thoroughly familiar with the precautions necessary when working on high voltage equipment. Always discharge the anode of the picture tube to the CRT ground of receiver before handling the tube.
7. After servicing make the following leakage current checks to prevent the customer from being exposed to shock hazards.

LEAKAGE CURRENT COLD CHECK

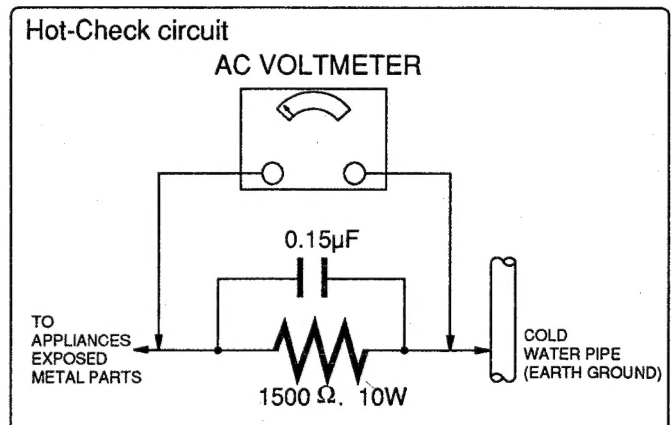
1. Unplug the AC cord and connect a jumper between the two prongs on the plug.
2. For physically operated power switches, turn power on. Otherwise skip step 2.
3. Measure the resistance value, with an ohmmeter, between the jumpered AC plug and each exposed metallic cabinet part on the receiver, such as screwheads, connectors, etc. When the exposed metallic part has a return path to the chassis, the reading should be between 1 M ohm and 12 M ohms. When the exposed metal does not have a return path to the chassis, the reading must be ∞ .

LEAKAGE CURRENT HOT CHECK (See Figure 1)

1. Plug the AC cord directly into the AC outlet. Do not use a isolation transformer for this check.
2. Connect a 1.5K ohms, 10 watts resistor, in parallel with a 0.15 μ F capacitor, between each exposed metallic part on the set and a good earth ground such as a water pipe, as shown in Figure 1.
3. Use an AC voltmeter, with 1000 ohms/volt or more sensitivity, to measure the potential across the resistor.
4. Check each exposed metallic part, and measure the voltage at each point.
5. Reverse the AC plug in the AC outlet and repeat each of the above measurements.
6. The potential at any point should not exceed 0.75 volt RMS. A leakage current tester (Simpson Model 229 equivalent) may be used to make the hot checks, leakage current must not exceed 1/2 milliamp. In case a measurement is outside of the limits specified, there is a possibility of shock hazard, and the receiver should be repaired and rechecked before it is returned to the customer.

COMPARISON CHART OF MODELS & MARKS

MODEL	MARK	MODEL	MARK
PV-M1324	A	PV-M2024	E
PV-M1324W	B	VV204	F
VV134	C	VV204W	G
VV134W	D	PV-M2044	H



PREVENTION OF ELECTRO STATIC DISCHARGE (ESD) TO ELECTROSTATICALLY SENSITIVE (ES) DEVICES

Some semiconductor (solid state) devices can be damaged easily by static electricity. Such components commonly are called Electrostatically Sensitive (ES) Devices. Examples of typical ES devices are integrated circuits and some field-effect transistors are semiconductor "chip" components. The following techniques should be used to help reduce the incidence of component damage caused by electro static discharge (ESD).

1. Immediately before handling any semiconductor component or semiconductor-equipped assembly, drain off any ESD on your body touching a known earth ground. Alternatively, obtain and wear a commercially available discharging ESD wrist strap, which should be removed for potential shock reasons prior to applying power to the unit under test.
2. After removing an electrical assembly equipped with ES devices, place the assembly on a conductive surface such as aluminum foil, to prevent electrostatic charge buildup or exposure of the assembly.
3. Use only a grounded-tip soldering iron to solder or unsolder ES devices.
4. Use only an anti-static solder removal device. Some solder removal devices not classified as "anti-static (ESD protected)" can generate electrical charge sufficient to damage ES devices.
5. Do not use freon-propelled chemicals. These can generate electrical charges sufficient to damage ES devices.
6. Do not remove a replacement ES device from its protective package until immediately before you are ready to install it. (Most replacement ES devices are packaged with leads electrically shorted together by conductive foam, aluminum foil or comparable conductive material).
7. Immediately before removing the protective material from the leads of a replacement ES device, touch the protective material to the chassis or circuit assembly into which the device will be installed.

CAUTION :

Be sure no power is applied to the chassis or circuit, and observe all other safety precautions.

8. Minimize bodily motions when handling unpackaged replacement ES devices. (Otherwise harmless motion such as the brushing together of your clothes fabric or the lifting of your foot from a carpeted floor can generate static electricity (ESD) sufficient to damage an ES device).

"NOTE to CATV system installer :

This reminder is provided to call the CATV system installer's attention to Article 820-40 of the NEC that provides guidelines for proper grounding and, in particular, specifies that the cable ground shall be connected to the grounding system of the building, as close to the point of cable entry as practical."

X-RADIATION

WARNING :

1. The potential source of X-Radiation in TV sets is the High Voltage section and the picture tube.
2. When using a picture tube test fixture for service, ensure that the fixture is capable of handling **25.0KV : Model A, B, C, D** or **30.0KV : Model E, F, G, H** (see chart, Page 1-1) without causing X-Radiation.

NOTE :

It is important to use an accurate periodically calibrated high voltage meter.

1. Reduce the brightness to minimum.
2. Set the SERVICE switch to SERVICE.
3. Measure the High Voltage. The meter reading should indicate

23.8 ± 1.5KV : Model A, B, C, D or **28.5 ± 1.5KV : Model E, F, G, H** (see chart, Page 1-1).

If the meter indication is out of tolerance, immediate service and correction is required to prevent the possibility of premature component failure.

4. To prevent an X-Radiation possibly, it is essential to use the specified picture tube.

VERTICAL OSC. DISABLE CIRCUIT TEST

SERVICE WARNING :

The test must be made as a final check before set is returned to the customer.

1. With the rear cover removed, supply about a 120V AC power source to the set, turn on the set.
2. Set the customer controls to normal operating positions.
3. Short between TP91 and TP92 on the Main circuit board with a jumper wire. Confirm that the vertical signal is lost.
4. If this does not occur, the vertical oscillator disable circuit is not operating. Follow the Repair Procedures of Vertical Oscillator Disable Circuit Repair Procedure before the set is returned to customer.

REPAIR PROCEDURES OF VERTICAL OSCILLATOR DISABLE CIRCUIT

1. Connect a DC voltmeter between capacitor C501 (+) on the Main circuit board and chassis ground.
2. If approximately +21.9V is not present at that point when 120V AC is applied, find the cause. Check R507, R509, R505, C501 and D503.
3. Check 12V supply if out of tolerance. Check Q1201 and other components that affect this transistor on the VCR Chassis.
4. Check Q510, Q310 and D510.
5. Carefully check above specified parts and related circuits and parts. When the circuit is repaired, try the Vertical Oscillator Disable Circuit Test again.

CIRCUIT EXPLANATION

VERTICAL OSCILLATOR DISABLE CIRCUIT

The positive DC voltage, is supplied from the cathode of D503 for monitoring the high voltage, is applied to the base of Q510 through R508 and R509. The voltage at the emitter of Q510 is regulated by Zener Diode D510. Under normal conditions, the voltage applied across the base and emitter of Q510 is not sufficient to cause base current to flow and holds the transistor cut off. If the high voltage increases over the specified voltage, the positive DC voltage which is supplied from the cathode of D503 also increases. The increased voltage applied to the base of Q510 causes base current to flow through Zener Diode D510. Consequently Q510 collector current begins to flow and turn Q310 on. This causes 12V at IC301 PIN 29 and disables the vertical Sweep. Thus, vertical signal is lost.

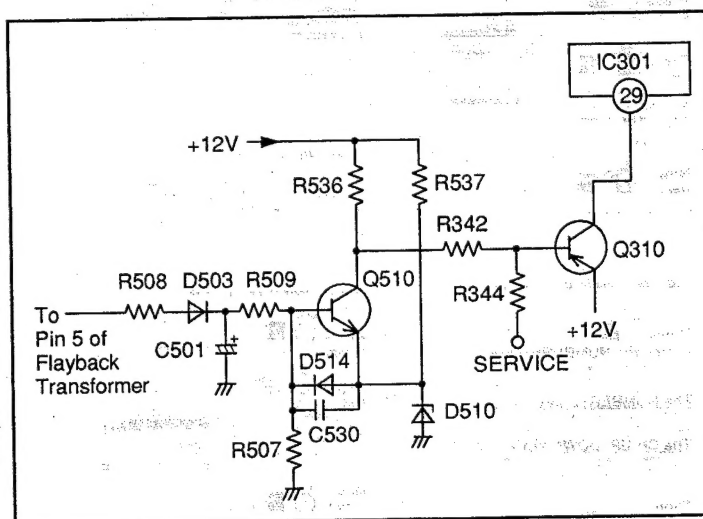
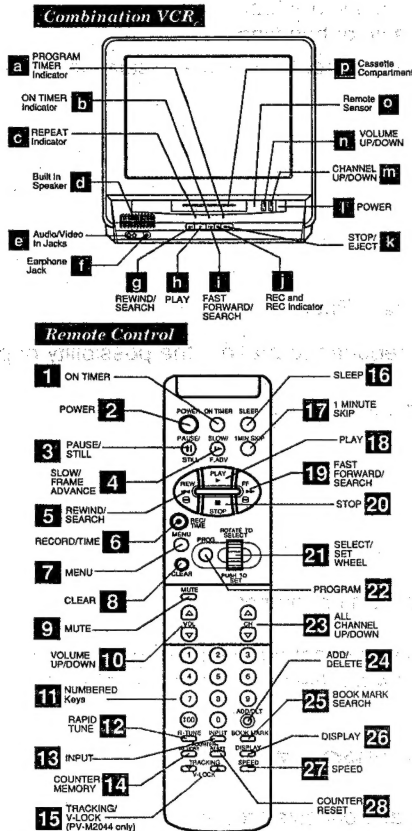


Figure 2

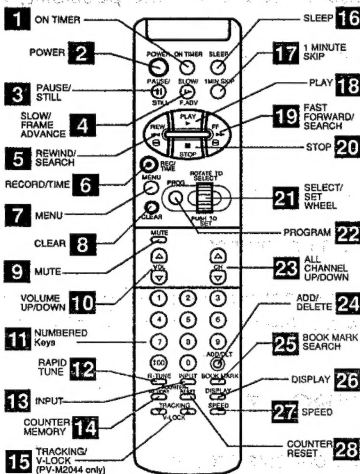
I. SUMMARY

A. BASIC OPERATIONS

Control Reference Guide



Remote Control



One Time Set Ups

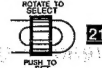
When the Combination VCR is first turned on, the channel auto set screen appears automatically followed by a prompter to set the clock.

Before you begin, make sure...

- your Antenna or Cable system is connected to the Combination VCR.
- you familiarize yourself with the easy operation of the Select/Set Wheel before turning on the Combination VCR.

Select/Set Wheel Operation

There are two types of Wheel operation. Selecting from a menu type screen and entering information, such as setting the clock, programming the timer, etc.

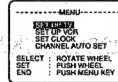


To Use the Wheel

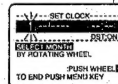
1. Rotate (up or down) to make selection
2. Press (like a button) to enter selection

Examples of Operation

A When selecting from a menu, rotate the Wheel to move the shaded area up or down the screen. Then, press the Wheel like a button to make your selection.



B When entering information such as, setting the clock, rotate the Wheel to change the numbers. Then, press the Wheel to enter and move on to the next item.



• By repeatedly pressing the Wheel, you can skip over already set items as desired.

Place Channels in Memory • Set the Clock

1. Press **CH 23** (or **m**) to start Channel Auto Set.

After channels have been placed in memory, the following on-screen displays appear in sequence:
"CH AUTO SET COMPLETED"
The lowest numbered channel.
"PLEASE SET CLOCK BY PUSHING MENU KEY"

CHANNEL AUTO SET
CONNECT ANTENNA CABLE
THEN...
PLEASE PUSH CH UP KEY

2. Press **MENU** **7** to display the SET CLOCK screen.

SET CLOCK
12:00 PM
BY ROTATING WHEEL
PUSH WHEEL
TO END PUSH MENU KEY

• If **MENU** is not pressed within 10 seconds, the Combination VCR will exit this mode. In this case, please see the "Set or Reset the Clock" section on the next page.

Then, rotate and press

to select and enter the month, date, year, time, and D.S.T. (Daylight Saving Time).
• The day of the week automatically appears.
• "DST-ON" automatically adjusts for Daylight Saving Time.

To make corrections, press the Wheel or CLEAR button repeatedly to move back or forward to the desired item.

3. Press **MENU** **7** twice to start the clock and exit this mode.

SET CLOCK
12:00 PM
DATE 1/17/2009
DAY 12:00 PM
DST-ON
TO CONNECT
TO START PUSH MENU KEY

Replace Channels in Memory

Example, if you have cable installed, etc.

- Press **MENU** **7** to select the menu.

Then, use **CH UP/DOWN** **21** to first, select CHANNEL AUTO SET from the menu and then to select your antenna system (TV or CATV).

Now, use **CH UP/DOWN** **21** to select and start AUTO SET.



Rapid Tune

Press **RAPID TUNE** **12** to display the last channel you were watching.
Previous Channel CH08 → Present Channel CH10
• When selecting channels with the CH UP/DOWN key, the channels must be displayed for at least 4 seconds in order for the Combination VCR to recognize them as a new selection.

Using the 100 key

When selecting CATV channels 100 to 125 with the NUMBERED keys, first press the 100 key and then enter the remaining two digits. For example, for channels 125: Press NUMBERED keys 100-2-5.

Add or Delete a Channel

- Press **CH UP/DOWN** **23** or use the NUMBERED keys to select a channel to add or delete.

The NUMBERED keys select all channels regardless of whether they have a signal or not.
The CH UP/DOWN key selects only those channels which are in the Combination VCR's channel memory.

Then, press **ADD/DEL** **24** to add or delete it.
• To select a deleted channel, use the NUMBERED keys.

CHANNEL OR DELETED
IF
ADDED

Set or Reset the Clock

- Press **MENU** **7** to display the menu.

Then, use **CH UP/DOWN** **21** to first, select SET CLOCK from the menu, and then to set the date, time and D.S.T. (Daylight Saving Time).

Now, press **MENU** **7** twice to start the clock and exit this mode.



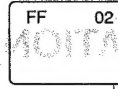
Helpful Notes

- This Combination VCR will accurately maintain its calendar up to Dec. 31, 2099, 11:59PM.
- Make entries within 5 minutes, or the Combination VCR exits the Set Clock screen.
- Normal TV or Cable channels are automatically selected and placed in memory depending on how your Combination VCR is hooked up.
- Channel Auto Set is not accessible when a recording is in progress. If it is a timer recording, set clock is also not accessible.

On Screen Displays (OSD)

Function & Channel Display

Whenever a function button is pressed (PLAY, FF, etc.) or the channel is changed, a 4 second OSD will appear first in large and then small characters.

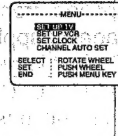


Menu Screen

- Press **MENU** **7** to display the menu.

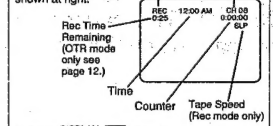
Then, use **CH UP/DOWN** **21** to make your selection. (See page 6 for details.)

• To get the most from each feature, it is recommended that you read the Operation Manual before attempting any operation.



VCR Status & Clock Display

- Press **DISPLAY** **26** to display the overlay shown at right.



- Press **DISPLAY** **26** again to remove this overlay.

Blank Tape Indication

If a blank section of tape is encountered in the play mode or the channel you select has no broadcast, the screen will change to a solid blue field. The screen will remain blue until a recorded signal is again detected or an active channel is selected.

Warning and Instruction Displays

These displays will alert you to a missed operation or provide further instructions.

If no active channels are found for CHANNEL MEMORY...

NO CH FOUND
PLEASE CHECK ANTENNA
CABLE CONNECTION THEN
PUSH CH UP KEY AGAIN

If you attempt to set or review a Timer Recording or set the On-Timer and the Clock is not set...

PLEASE SET CLOCK
BEFORE PROGRAMMING

If a Timer Program was not completed before exiting the Program mode...

PROGRAM IS INCOMPLETE

If you cassette with record tab is not inserted before a Timer Recording is about to begin...

PLEASE PREPARE
FOR TIMER REC

If you press REC on the remote control or REC and PLAY on the Combination VCR, and a cassette is inserted with no record tab...

CHECK CASSETTE
RECORD TAB

If you press PLAY or REC on the remote control or REC and PLAY on the Combination VCR without a cassette inserted...

NO CASSETTE
PLEASE INSERT A CASSETTE

If you press STOP during a Timer Recording...

TO CANCEL TIMER REC
HOLD DOWN STOP KEY
FOR APPROX 3 SEC

Watching TV/ Closed Caption System

Before you begin, make sure ...
• connections are complete. • Combination VCR is plugged in.

Watching TV Main Operation

Press **2**

to turn the Combination VCR on.

Then, select a channel using the CHANNEL UP/DOWN or NUMBERED keys.

Set the On Timer

The Combination VCR can be set to turn on automatically, ON TIMER.

1 Press **1**

The ON TIMER display appears on-screen.

2 Use **21**

to set the ON time.

Then, Use **21**

to select either a channel number for TV mode or "PLAY" for VCR Playback mode when the Combination VCR comes on.

To make corrections, press the Wheel or CLEAR button repeatedly to move back or forward the desired item.

3 Press **1**

to set the ON TIMER function. "ON TIMER SET" will appear for about 5 seconds on-screen.

To cancel, press the ON TIMER button after the timer has been set. "ON TIMER END" will appear for about 5 seconds on-screen.

Set the Sleep Timer

The Combination VCR can be set to turn off automatically, SLEEP.

Press **16** repeatedly.

"SLEEP TIMER 30, 60 or 90 (minutes)" will appear on-screen.

To cancel, press SLEEP button until "SLEEP TIMER 00" appears.

Closed Captioned Settings

This system not only allows the hearing impaired to enjoy selected programs, but also makes valuable information from your TV stations available to you.

Caption MODE: CAPTION

A narration of selected TV programs will be displayed on the screen. Check your TV program listings for CC (closed caption) broadcasts.

Caption MODE: OFF

Narration will not appear on the screen even if a closed caption broadcast is received.

Caption MODE: TEXT

The lower half of the screen will be blocked out. When the TV station broadcasts text such as program listings, special information, etc., it will appear in this space. This text block will remain on the screen until you remove it by changing the display in step 3 below.

Set the Closed Caption Mode

1 Press **7**

to display the menu screen.

2 Use **21**

to select SET UP TV from the menu, and then, select CAPTION.

3 Use **21**

to select the Caption MODE as described above and then to select C1 or C2 as the caption channel.

Then, press MENU twice to exit this mode.

The caption signal may be broadcast over one or both channels (C1, C2).

Make entries within 5 minutes, or the Combination VCR exits the CAPTION screen.

Recording and Playing Back a Closed Caption/Text Program

Record: Your Combination VCR will automatically record the Closed Caption/Text signal. Just follow normal recording operation.

Playback: To display the Closed Caption narration or Text during playback, simply follow the steps above.

Adjusting the Picture and Sound

TV Picture Adjustment

1 Press **7**

to display the menu screen.

2 Use **21**

to first, select SET UP TV and then, to select VIDEO ADJUST.

3 Use **21**

to select and display the desired video adjust overlay. (See description at right.)

4 Use **21**

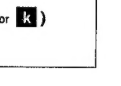
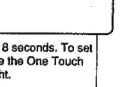
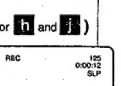
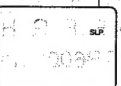
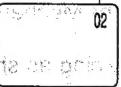
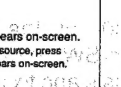
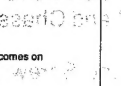
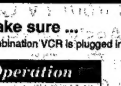
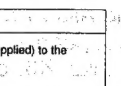
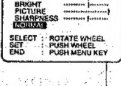
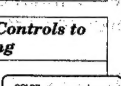
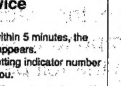
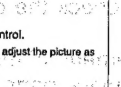
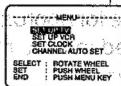
to adjust and set the control.

5 Press **7** twice

to exit this mode.

If no button is pressed within 5 minutes, the video adjust overlay disappears.

Adjustment scale and setting indicator number are displayed to assist you.



Video Adjust Overlays

COLOR Control

To adjust the intensity of the colors.

TINT Control

To adjust for the most natural flesh tones.

BRIGHT Control

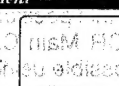
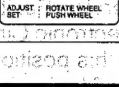
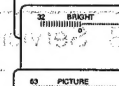
To adjust the brightness of the picture.

PICTURE Control

To adjust the intensity of the picture by adjusting contrast and color level at the same time and in the proper balance.

SHARPNESS Control

To adjust the sharpness of the picture.



Volume Adjustment

Press **10**

to adjust the volume level.

Adjustment scale and setting indicator number are displayed to assist you.

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Adjustment scale and setting indicator number are displayed to assist you.

Basic and Special Playback

Before you begin, make sure ...
• connections are complete. • Combination VCR is plugged in.

Basic Playback Operation

1 Insert a cassette **P**

Combination VCR power comes on automatically. Playback begins if cassette has no record tab.

2 Press **13** (or **h**)

to start playback.

3 Press **5** (or **g**)

or **19** (or **i**)

to quickly locate a scene during playback.

4 Press **20** (or **k**)

to stop playback.

Then, press **k**

on the Combination VCR to eject the cassette.

Special Effects During Playback

These features work best in SLP mode. (SP or SLP mode for model PV-M2044 only) Sound will be muted.

Double Speed Playback

Press **11** on the Combination VCR.

Press again to release.

Slow Motion Playback

Press **4**

to start playback.

Press again to release.

Still Frame Picture

Press **3**

to start playback.

Press again to release.

Frame Advance

Press **4** repeatedly

or hold down

In Still mode, to advance the still picture one frame at a time.

Press STILL or PLAY to release.

Intelligent Search

If after a Rew or FF search is done the search is re-started within 5 seconds, the search speed is slow down (SP mode: 5 times; SLP mode: 9 times) (SP mode for model PV-M2044 only) for a duration of 8 sec. Then normal search speed resumes.

Basic Recording

Before you begin, make sure ...
• connections are complete. • Combination VCR is plugged in.

Basic Recording Operation

1 Insert a cassette **P**

with record tab.

Combination VCR power comes on automatically.

2 Press **13**

until channel number appears on-screen.

To record from an outside source, press INPUT so that "LINE" appears on-screen.

3 Press **23**

to select a channel to be recorded.

4 Press **27**

until the desired speed appears on-screen.

5 Press **6** (or **h** and **i**)

to start recording.

6 Press **20** (or **k**)

to stop recording.

7 Press **20** (or **k**)

to stop recording.

8 Press **20** (or **k**)

to stop recording.

9 Press **20** (or **k**)

to stop recording.

10 Press **20** (or **k**)

to stop recording.

11 Press **20** (or **k**)

to stop recording.

12 Press **20** (or **k**)

to stop recording.

13 Press **20** (or **k**)

to stop recording.

14 Press **20** (or **k**)

to stop recording.

15 Press **20** (or **k**)

to stop recording.

16 Press **20** (or **k**)

to stop recording.

17 Press **20** (or **k**)

to stop recording.

18 Press **20** (or **k**)

to stop recording.

19 Press **20** (or **k**)

to stop recording.

20 Press **20** (or **k**)

to stop recording.

21 Press **20** (or **k**)

to stop recording.

22 Press

B. SERVICE NOTES AND CAUTIONS

When servicing, note the following items.

A. Cylinder Rotation in STOP mode

The cylinder will continue to rotate for approximately 10 minutes after the STOP button is pressed in Play mode etc. Eject the tape in order to stop the cylinder.

B. Servicing the VCR Section and the TV Section

B-1. Service Position (1)

Service Position (1) is used to check the of Mechanism and Electronic Circuits.

In this position, check the movement of mechanical parts on the Mechanism Chassis and replace parts as needed.

In this position, limited checking of the electronic circuit on the VCR Main C.B.A. from the component side of the board is possible using the screening on the foil pattern.

To position the VCR Unit and the TV Main C.B.A. for servicing as shown in Fig. 1-1, use the following procedure.

- 1) Remove Back Cover Unit by removing 9 Screws (S-1) in Fig. D2, page 2-2.
- 2) Disconnect connector P4152, P3002 and P4153 : Model E, F, G, H in Fig. D5, page 2-2.
- 3) Release A/C Cord and Lead Ass'y from Clamper on Top Shield Plate Ass'y in Fig. D6, page 2-3.
- 4) Disconnect connectors (K1, K2, K6) on TV Main C.B.A. coming from VCR Unit and connector (B1) on TV Power C.B.A. coming from VCR Unit and connector (B2) on TV Power C.B.A. coming from Power Supply Ass'y in Fig. D4, page 2-2.
- 5) Carefully pull out VCR Unit from TV Cavity.
- 6) Remove Top Shield Plate Ass'y by removing 2 Screws (S-6) and 2 Screws (S-7) in Fig. D6.
- 7) Remove 2 Screws (S-10), 2 Screws (S-11), Screw (S-12), Screw (S-13), Screw (S-14) and Chassis Angle in Fig. D9, page 2-3.
- 8) Remove 2 Screws (S-16) and Screw (S-17) in Fig. D10, page 2-4.
- 9) Disconnect connector P6001 on the VCR Main C.B.A. coming from the Safety Tab SW. in Fig. D10.
- 10) Raise the Mechanism Chassis and fix it using the Chassis Angle which was used to fix the Mechanism Chassis on the Frame.
- 11) Place the VCR Unit for servicing as shown in Fig. 1-1.
- 12) Reconnect connectors (K1, K2, K6, B1, B2), P4152, P3002 and P4153 : Model E, F, G, H.
- 13) Place the jumper between TP6001 and GND.

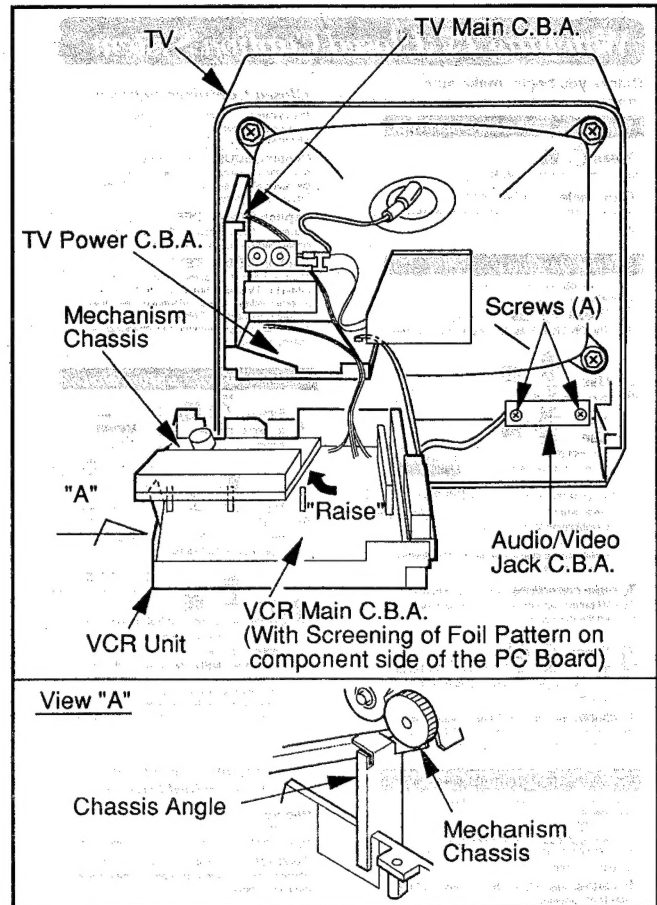


Fig. 1-1

B-2. Service Position (2)

Service Position (2) is used for checking and replacing Mechanical and Electrical parts.

To position the VCR Unit for servicing as shown in Fig. 1-2; use the following procedure.

- 1) Remove Back Cover Unit by removing 9 Screws (S-1) in Fig. D2, page 2-2.
- 2) Disconnect connector P4152 in Fig. D5, page 2-2.
- 3) Model : E, F, G, H
Remove Audio/Video Jack C.B.A. by removing 2 Screws (A) as shown in Fig. 1-1.
- 4) Release A/C Cord and Lead Ass'y from Clamper on Top Shield Plate Ass'y in Fig. D6, page 2-3.
- 5) Disconnect connectors (K1, K2, K6) on TV Main C.B.A. coming from VCR Unit and connector (B1) on TV Power C.B.A. coming from VCR Unit and connector (B2) on TV Power C.B.A. coming from Power Supply Ass'y in Fig. D4, page 2-2.
- 6) Carefully pull out VCR Unit and Audio/Video Jack C.B.A. : Model E, F, G, H from TV Cavity.
- 7) Remove Top Shield Plate Ass'y by removing 2 Screws (S-6) and 2 Screws (S-7) in Fig. D6.
- 8) Remove Power Supply Ass'y by removing Screw (S-8) and Screw (S-9) in Fig. D7, page 2-3.

- 9) Remove Operation I, II C.B.A.s by releasing 3 Locking Tabs (L-6) in Fig. D8, page 2-3.
- 10) Remove 2 Screws (S-10), 2 Screws (S-11), Screw (S-12), Screw (S-13), Screw (S-14), Screws (S-15) and Chassis Angle in Fig. D9, page 2-3.
- 11) Lift up the VCR Chassis Unit. Refer to Note Item 1 and 2. Then place it left side down.
- 12) Remove 2 Screws (S-16) and Screw (S-17) in Fig. D10, page 2-4.
- 13) Disconnect connector P6001 on the VCR Main C.B.A. coming from the Safety Tab SW. in Fig. D10.
- 14) Open the Mechanism Chassis and the Cassette Up Ass'y.
- 15) Reconnect connectors (K1, K2, K6, B1, B2).
- 16) Place the jumper between TP6001 and GND.

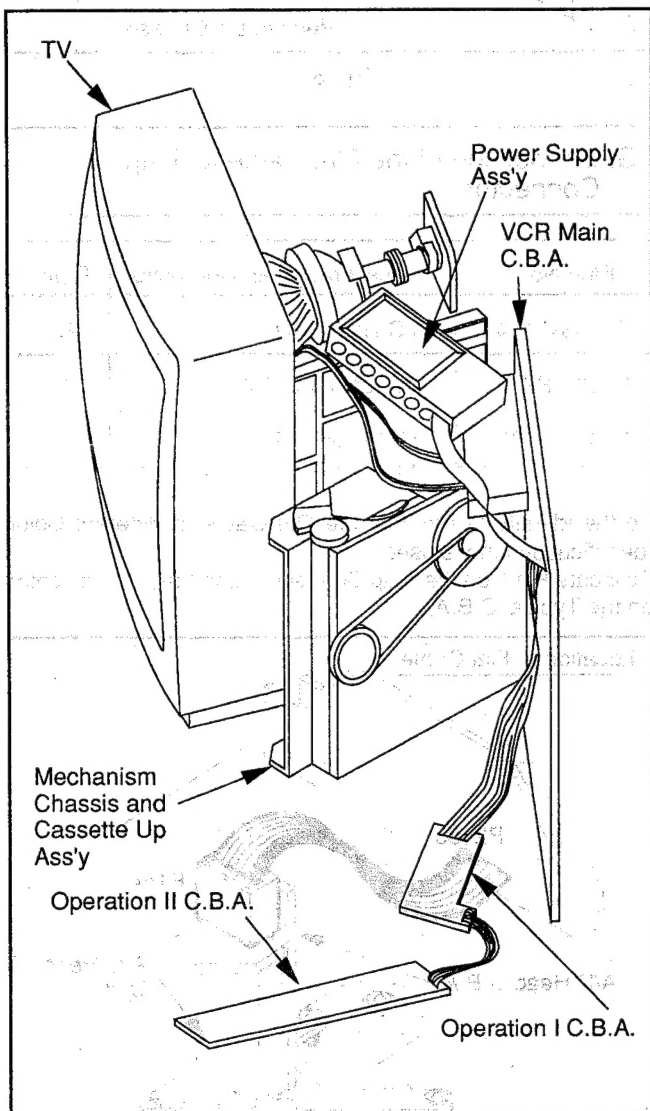


Fig. 1-2

Note:

1. **To remove the VCR Chassis Unit from the frame:**
 - 1) While pressing in on the locking tab (A), lift the Side Plate -R of Cassette Up Ass'y until the edge of VCR Main C.B.A. clears the locking tab (A).
 - 2) Press the locking tab (B) and lift the Side Plate -L until even with the Side Plate -R. Then lift entire VCR Chassis Unit out from the frame.

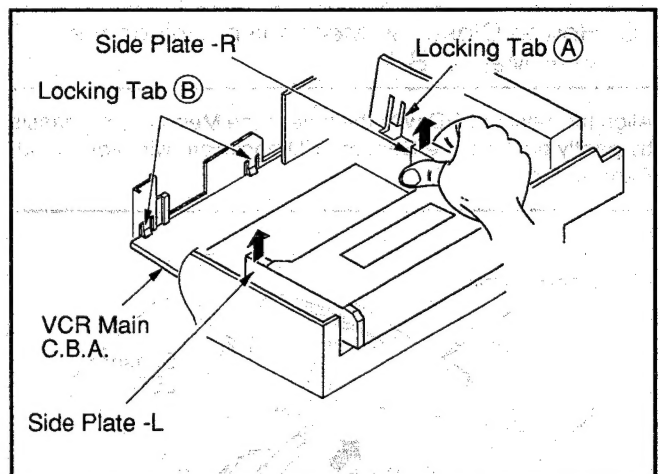


Fig. 1-3

2. When lifting up the VCR Chassis Unit, do not pull up on the Top Plate of the Cassette Up Ass'y.
3. When servicing in Service Position (2), do not use a T160 tape. It may cause a Tape Jam.
4. If misloading of the cassette tape is encountered in this position, press the Cassette Tape firmly into the Cassette Up Ass'y with the left thumb.

C. To Service the CCV C.B.A.

- 1) Remove the Rear Panel.
- 2) Press the CCV C.B.A. to the angle shown in diagram.
- 3) Unsolder the Shield Case -Bottom.
- 4) Service the CCV C.B.A. while pressing the CCV C.B.A. at angle shown in diagram.

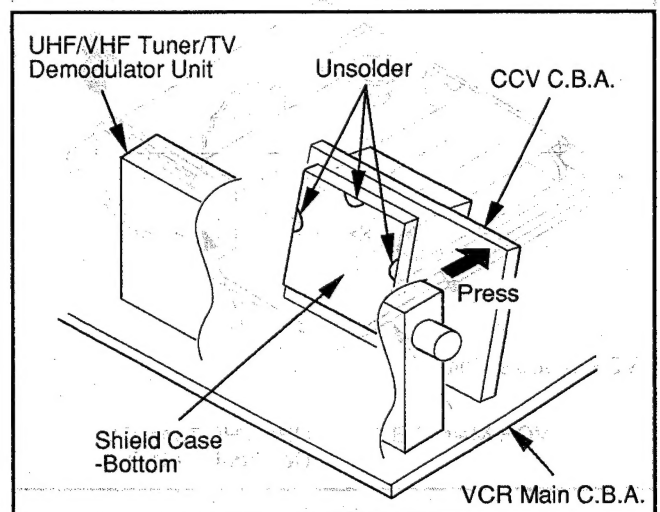


Fig. 2

D. How to Close the Mechanism Unit on the VCR Main C.B.A.

Align the Sensor LED with the hole in the Mechanism Chassis by gently pushing the Sensor LED backward with your hand. Refer to Fig. 3.

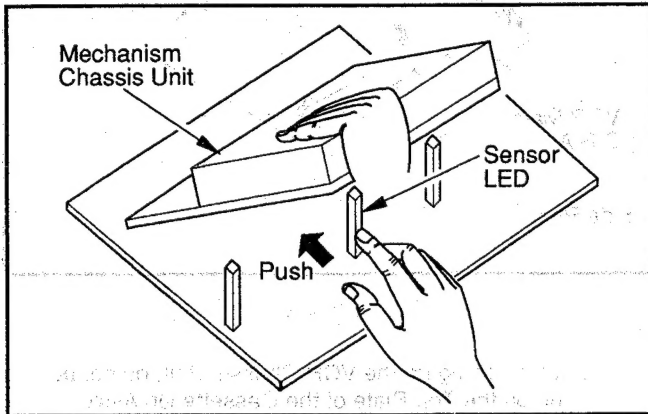


Fig. 3

E. Handling of the VCR Main C.B.A. when Servicing

DO NOT pull the VCR Main C.B.A. in the direction indicated by the arrow. **DO NOT** pull upward while holding the UHF/VHF Tuner/TV Demodulator Unit because you may crack the VCR Main C.B.A..

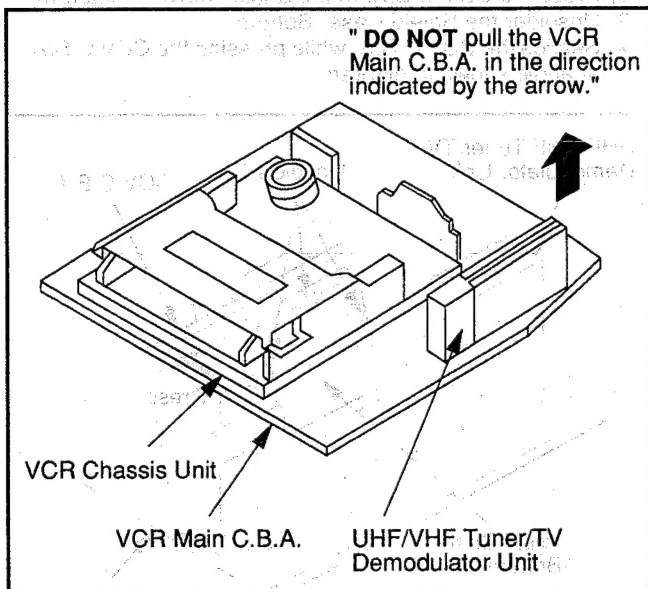


Fig. 4

F. Service of Capstan Motor Drive C.B.A.

When servicing, avoid touching IC2502 on the Capstan Motor Drive C.B.A. because it is **HOT** during normal operation.

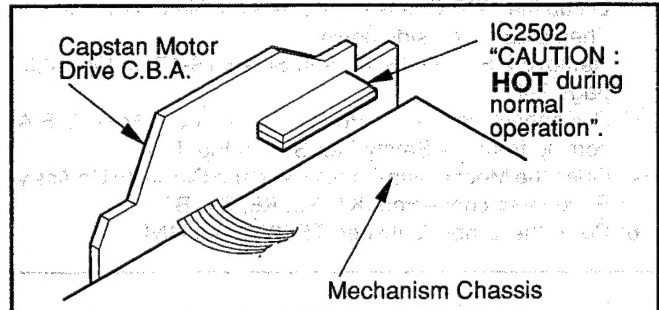


Fig. 5

G. Connection of the Flat Cable to Trap Connector

Plug No.	Location of Trap Connector	Type
P2503-P1541	A/C Head Unit	A
P7501-P7551	Operation I C.B.A.	A
P1001-P1201	VCR Main C.B.A.	B

To identify Pin 1 of the Flat Cable, a different Color Identification Line is used.

To locate Pin 1 on the Trap Connector, find the pin 1 indicator on the Typical C.B.A.

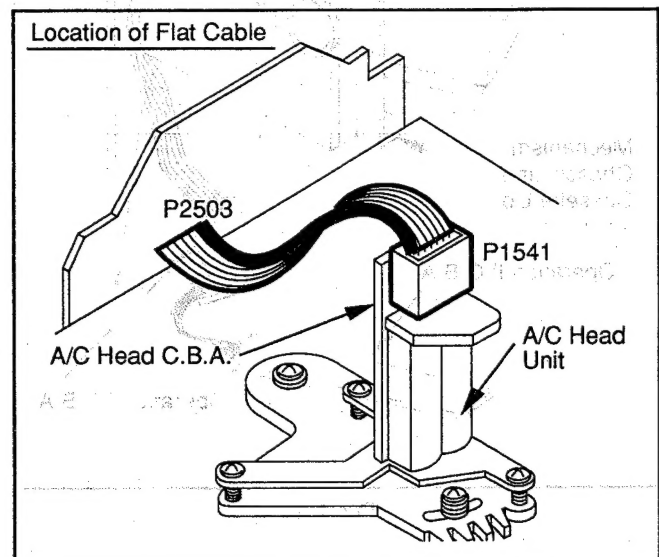


Fig. 6-1

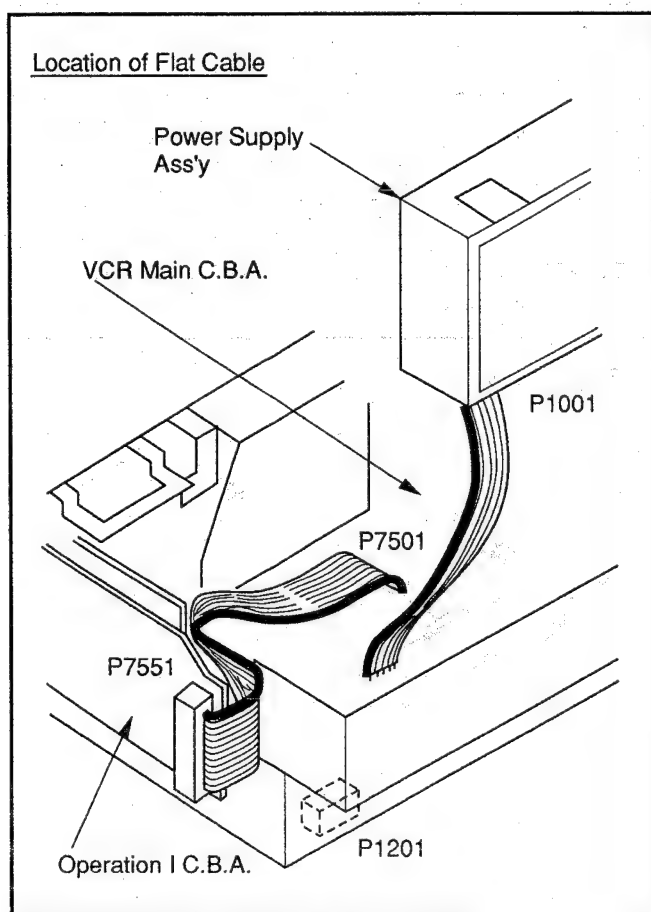


Fig. 6-2

(Removal or Installation of Flat Cable)

a. Removal

1. Type A used in the A/C Head Unit and the Operation I C.B.A.

- 1) Pull out the Flat Cable. Minimize stress by holding it securely to avoid damage of the individual wires. (See Fig. 6-3)

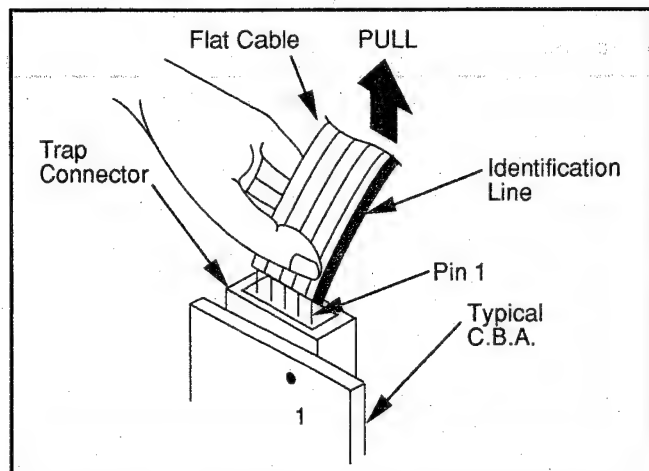


Fig. 6-3

2. Type B used in the VCR Main C.B.A.

- 1) Pull out the Flat Cable while pushing against the (a) portion of the Trap Connector in the direction indicated by arrow to unplug as shown in Fig. 6-4.

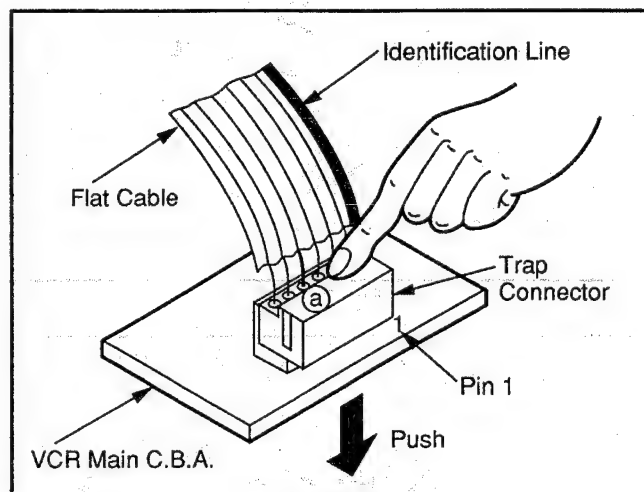


Fig. 6-4

Note :

After unplugging, make sure that the (a) portion of the Trap connector has returned to its original position.

b. Installation

1. Adjust the position of the Flat Cable so that the Identification Line on the Flat Cable aligns with Pin 1 of the Trap Connector in Fig. 6-3 and 6-4.
2. Align the individual wire with its individual Trap Connector Hole. Then insert the Flat Cable wire into the Trap Connector.

Note:

After installation, inspect the Connection to ensure that an individual wire is not bent or touching another wire.

H. Removal/Installation of Mechanism Chassis to the VCR Main C.B.A.

Preparation

- 1) Remove 2 Screws (S-10), 2 Screws (S-11), Screw (S-12), Screw (S-13), Screw (S-14) and Chassis Angle in Fig. D9, page 2-3.
- 2) Remove 2 Screws (S-16) and Screw (S-17) in Fig. D10, page 2-4.
- 3) Disconnect connector P6001 on the VCR Main C.B.A. coming from the Safety Tab SW. in Fig. D10.

a. Removal

Remove the Mechanism Chassis as follows.

- 1) Lift up the right rear corner while holding the VCR Main C.B.A. to disconnect the right rear mechanism connector.
- 2) Lift up the left rear corner while holding the VCR Main C.B.A. to disconnect the left rear mechanism connector.

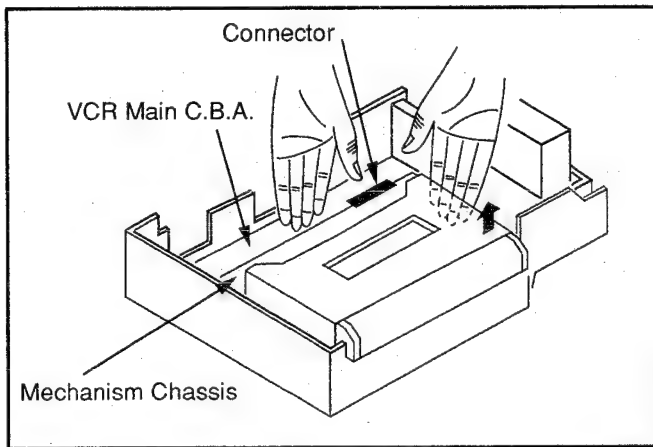


Fig. 7-1-1

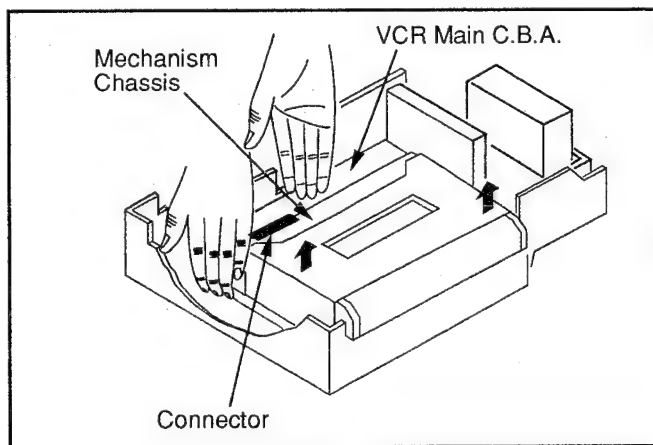


Fig. 7-1-2

b. Installation

Connect the Mechanism Chassis to the VCR Main C.B.A., as shown below. Be sure to press the rear portion of the mechanism chassis to insert connectors securely.

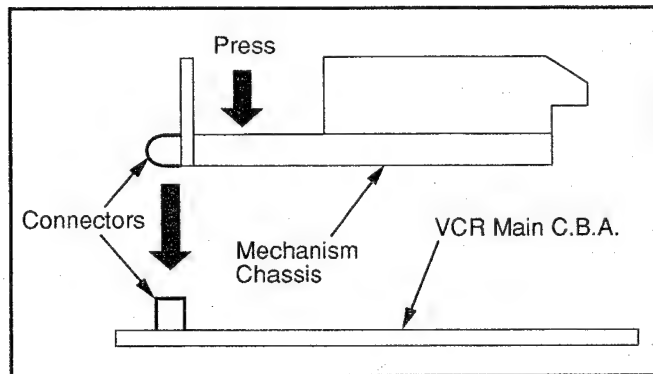


Fig. 7-2

I. Method for Manual Loading / Unloading of VCR

Turn the Loading Pulley of the Motor Block Ass'y (shown in Fig. 8) counterclockwise (for loading) or clockwise (for unloading) as viewed from the Front Side.

Note :

DO NOT apply +12V to the Terminals of Loading Motor Unit on the Motor Block Ass'y.

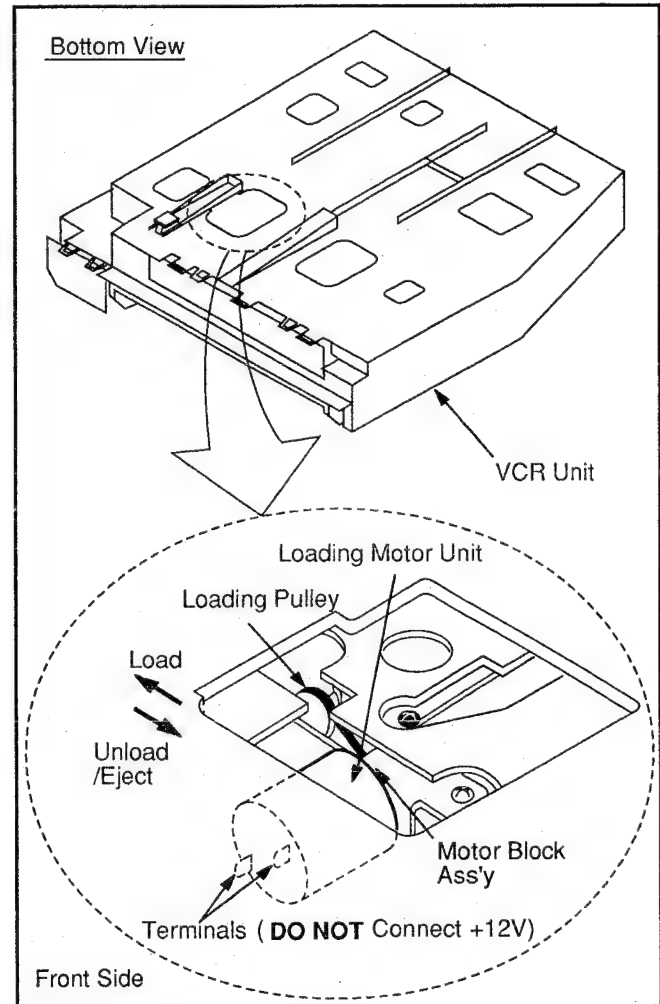


Fig. 8

J. How to remove a Jammed Tape

1. Remove Back Cover Unit by removing 9 Screws (S-1) in Fig. D2, page 2-2.
2. Disconnect connector P4152, P3002 and P4153 : Model E, F, G, H in Fig. D5, page 2-2.
3. Release A/C Cord and Lead Ass'y from Clamper on Top Shield Plate Ass'y in Fig. D6, page 2-3.
4. Disconnect 3 connectors (K1, K2, K6) on TV Main C.B.A. and 2 connectors (B1,B2) on TV Power C.B.A. in Fig. D4, page 2-2.
5. Carefully pull out VCR Unit from TV Cavity.
6. Remove Top Shield Plate Ass'y by removing 2 Screws (S-6) and 2 Screws (S-7) in Fig. D6.
7. Remove Operation II C.B.A. by unlocking 2 Locking Tabs (L-6) in Fig. D8, page 2-3.
8. Rotate Loading Pulley to unload the Mechanism from the bottom side of VCR Unit as shown in Fig. 8.
9. Turn Capstan Pulley counterclockwise from VCR hole as shown in Fig. 9 to wind the Tape Slack into the cassette.

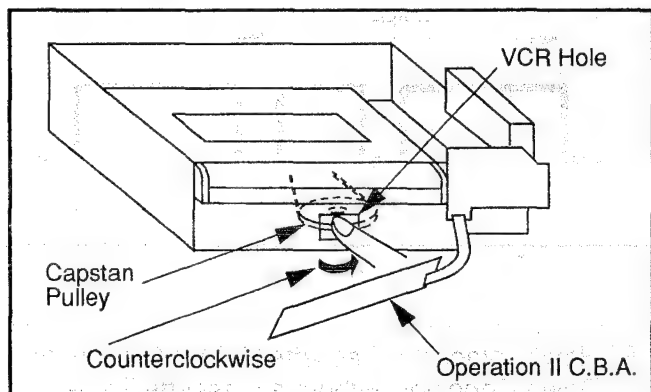


Fig. 9

K. Simplified Fault Finding Point

This model has a Simplified Self-Diagnostic System to facilitate finding the cause in case VCR stops accidentally and button operation can not be accessible.

Method 1

Press FF button on VCR to display Fault Code indication in OSD or LED as listed in Fig. 10-2.

Use LED indication when OSD indication can not be displayed.

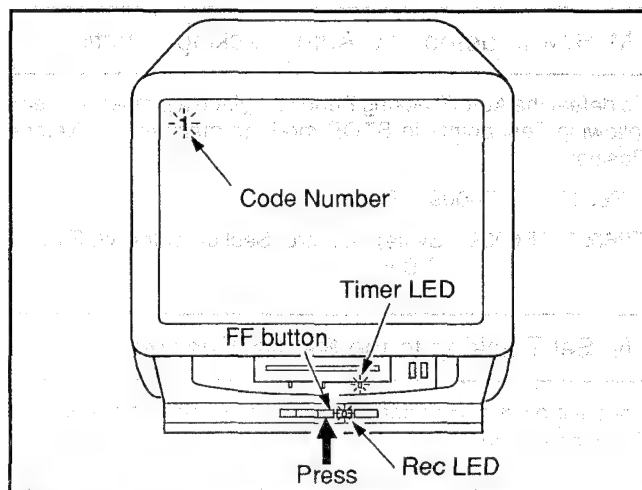


Fig. 10-1

The Simplified Fault finding data is memorized for approximately 24 hours. This data is cleared after it is displayed with the FF button and then the Power button is pressed back on.

Method 2

Connect the oscilloscope probe to TP6002 on the Servo Section of the VCR Main C.B.A.. The signal at TP6002 indicates the trouble as listed in Fig. 10-2.

Note : Under normal conditions, a DC +5V Signal at TP6002 is displayed.

Information	Code No. (OSD)	LED	TP6002
Takeup Reel Lock	1	Timer LED lights up	Low Voltage 0V
Cylinder Lock	2	Rec LED lights up	0.3Hz Pulse (Duty 50%) 3.0Sec 5V 0V
Exceeds Loading/Unloading Time	3	Timer and Rec LED light up	0.75Hz Pulse (Duty 50%) 1.5Sec 5V 0V
Exceeds Cassette Loading/Unloading Time	4	Timer and Rec LED flash	Intermittent Pulse 350mSec 2Sec 1.0Sec 5V 0V

Fig. 10-2
1-11

L. Service Test Point (TP6001)

The detection of the Supply / Takeup Photo Transistors, Cassette Down, Reel Sensor and Cylinder Lock will be inhibited when TP6001 is grounded on the System Control Section of the VCR Main C.B.A.

Note :

If a Cassette Up Ass'y is removed and TP6001 is grounded, confirmation of Mechanism movement without a Tape is possible.

M. How to defeat the Auto Tracking Function

To defeat the Auto Tracking Function, place a jumper between following Test points in STOP mode to maintain the Neutral Position.

TP6003 ---- TP6009 (+5V)

TP6003, TP6009 : System Control Section of the VCR Main C.B.A.

N. Set Tracking to the Neutral Position

Pressing eject and reinserting a Tape will access the Neutral Tracking position.

O. Microprocessor Judgement Point

This model has the Microprocessor judgement system to improve the accuracy of microprocessor replacement if the unit malfunctions.

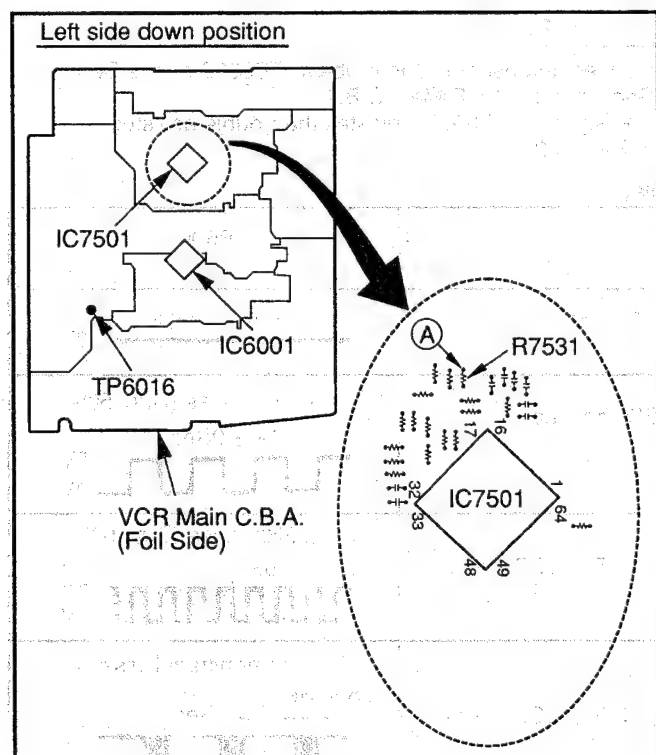


Fig. 11-1

1. IC6001 Judgment

Use TP6016 on the VCR Main C.B.A as a check Terminal for judgment of the microprocessor. The microprocessor is OK if there is Scan pulse output. See Fig. 11-2.

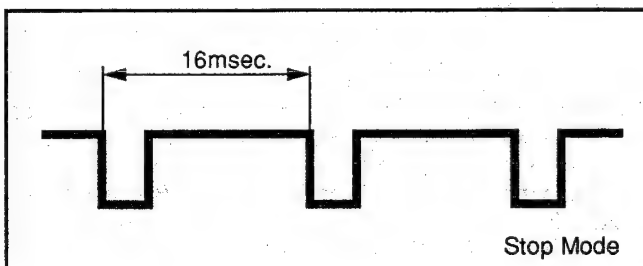


Fig. 11-2

2. IC7501 Judgment

Use point (A) on the VCR Main C.B.A as a check Terminal for judgment of the microprocessor. The microprocessor is OK if there is chip select pulse output. See Fig. 11-3.

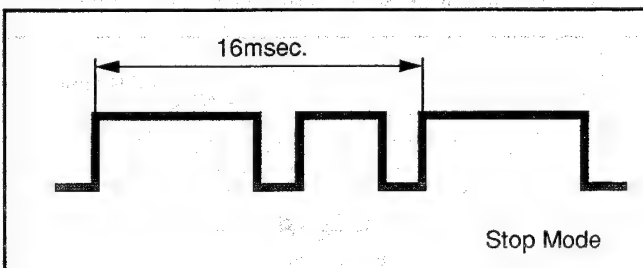


Fig. 11-3

P. How to place the Cassette Holder Ass'y in the Down Condition without a Cassette Tape

To place the Cassette Holder Ass'y in the down position without a cassette tape, use the following procedure.

Method 1 - Refer to Fig. 12

1. Disconnect AC Cord.
2. In the order described in the Disassembly of Cabinet Parts Section, remove the VCR Chassis Unit.
3. Place the Unit left side down.
4. Remove Screw (A) and lift (Do Not Remove) the Grounding Plate to access the right side First Locking Tab.
5. Turn the Loading Pulley counterclockwise (Front View) until the Top of Set Lever L and R is locked by the First Locking Tab (Left and Right).
6. Clear the First Locking Tab (Left and Right) by pressing down the top of the Set Lever L and R.
7. Turn the Loading Pulley counterclockwise (Front View) until the top of Set Lever L and R is locked by the Second Locking Tab (Left and Right).
8. Clear the Second Locking Tab (Left and Right) by pressing down the Top of the Set Lever L and R.
9. Continue to turn the Loading Pulley until the Cassette Down Position is obtained.

- b. Press the part downward with tweezers and solder both electrodes as shown below.

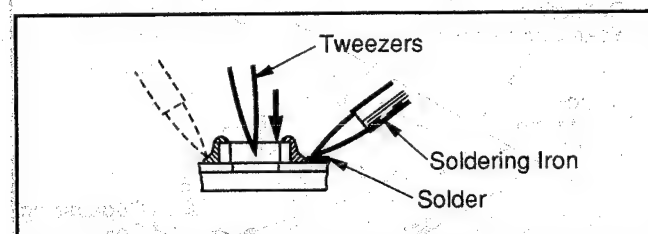


Fig. 14-3

Note:
Do not glue the replacement leadless component to the circuit board.

Y. Special Note

All integrated circuits and many other semiconductor devices are electrostatically sensitive and therefore require the special handling techniques described under the "ELECTROSTATICALLY SENSITIVE (ES) DEVICES" section of this service manual.

Use this cross reference chart to determine the equivalent model used in the Summary, Adjustment Procedures, Schematic Diagrams, Circuit Board Diagrams, Exploded Views and Replacement Parts List.

MODEL	MARK
PV-M1324	A
PV-M1324W	B
VV134	C
VV134W	D
PV-M2024	E
VV204	F
VV204W	G
PV-M2044	H
NOT USED	Z

Note : Refer to Item 7 of Schematic and C.B.A. Diagram Notes, Page 3-2 for mark "Z".

C. IC, TRANSISTOR AND CHIP PART INFORMATION

GENERAL C.B.A./ASSY PARTS

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II. ADJUSTMENT PROCEDURES
A. MECHANICAL ADJUSTMENT PROCEDURES

1. DISASSEMBLY OF CABINET PARTS

1. DISASSEMBLY FLOWCHART

This flowchart indicates the disassembly steps of the cabinet parts and the P.C. Boards in order to gain access to the item(s) to be serviced. When reassembling, perform the step(s) in the reverse order.

Caution : Disconnect AC Plug before disassembly.

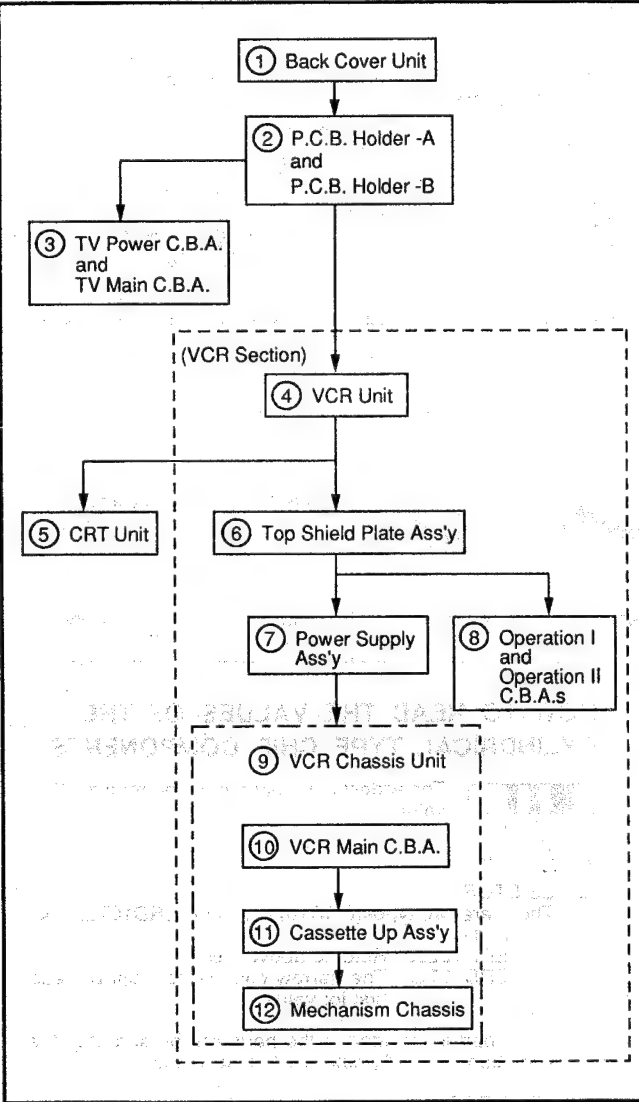


Fig. D1

How to read chart shown above :
(A) : Order of steps in Procedure
When reassembling, perform the step(s) in the reverse order.
These numbers are also used as the identification (location) No. of parts in Figures.
(B) : Part to be removed or installed.
(C) : Fig. No. showing Procedure or Part Location.
(D) : Identification of part to be removed, unhooked, unlocked, released, unplugged, unclamped, or unsoldered.
9(S-1)=9 Screws (S-1); (L-1)=Locking Tab (L-1)

2. DISASSEMBLY METHOD

Table with 5 columns: STEP /LOC. No., PART, Fig. No., REMOVE, Note. It lists 12 steps for disassembly, including Back Cover, P.C.B. Holders, TV Power C.B.A., VCR Unit, CRT Unit, Top Shield Plate, Power Supply, Operation C.B.A.s, VCR Chassis, VCR Main C.B.A., Cassette Up Ass'y, and Mechanism Chassis.

A B C D

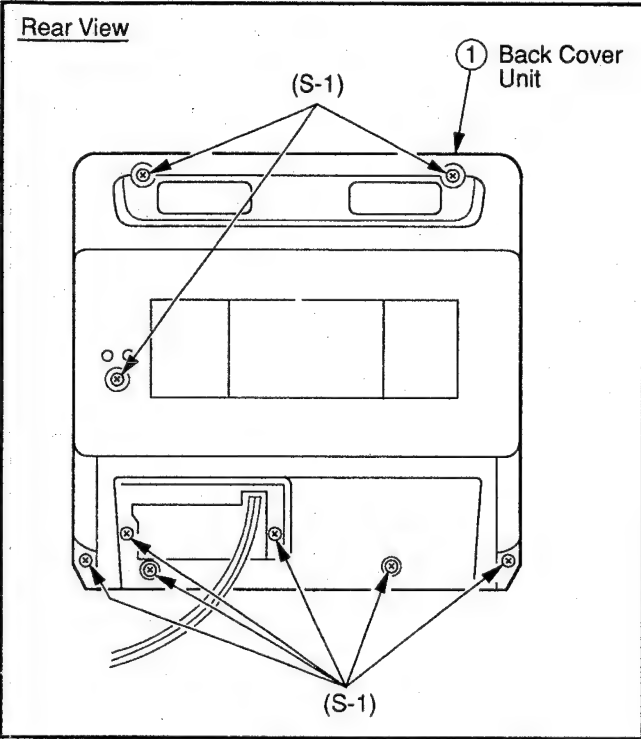


Fig. D2

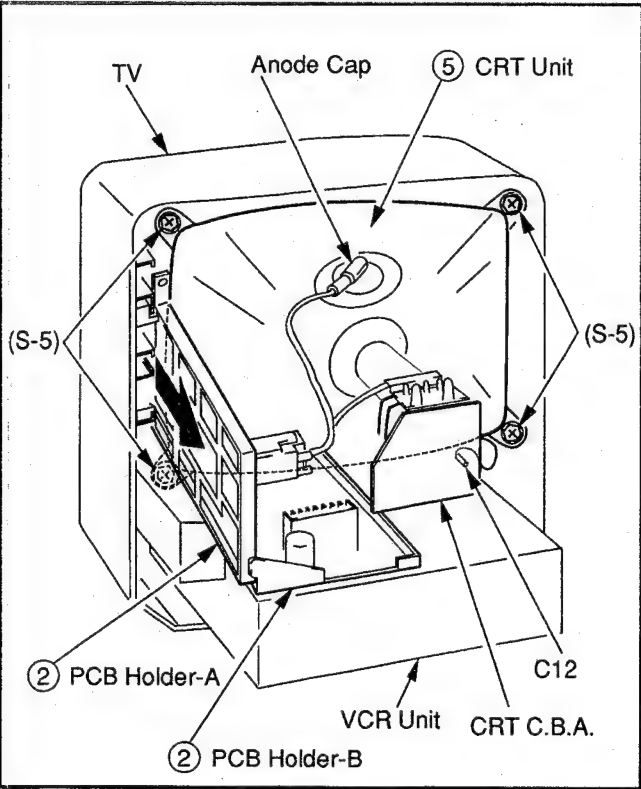


Fig. D3

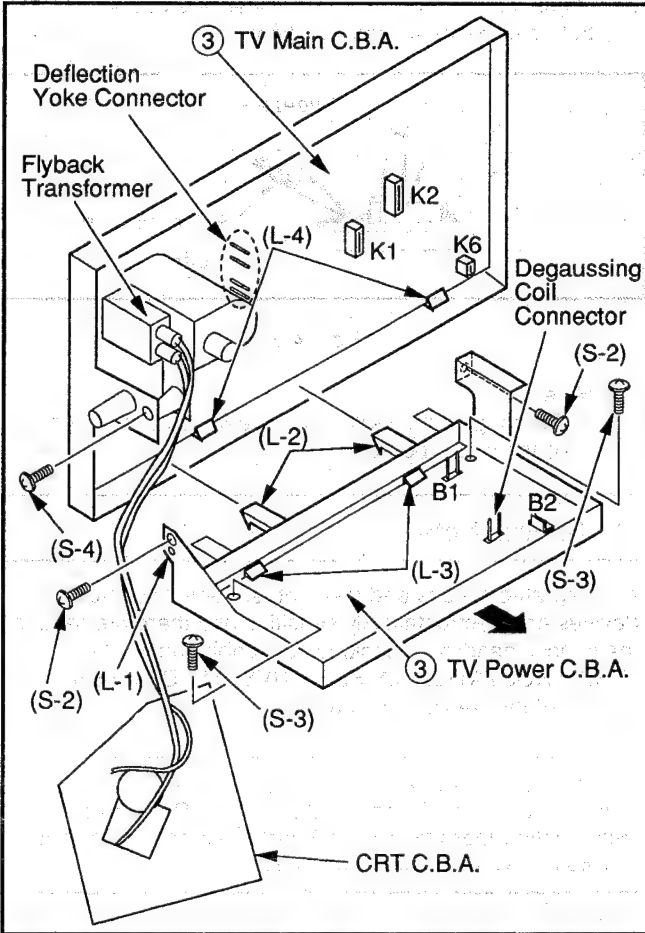


Fig. D4

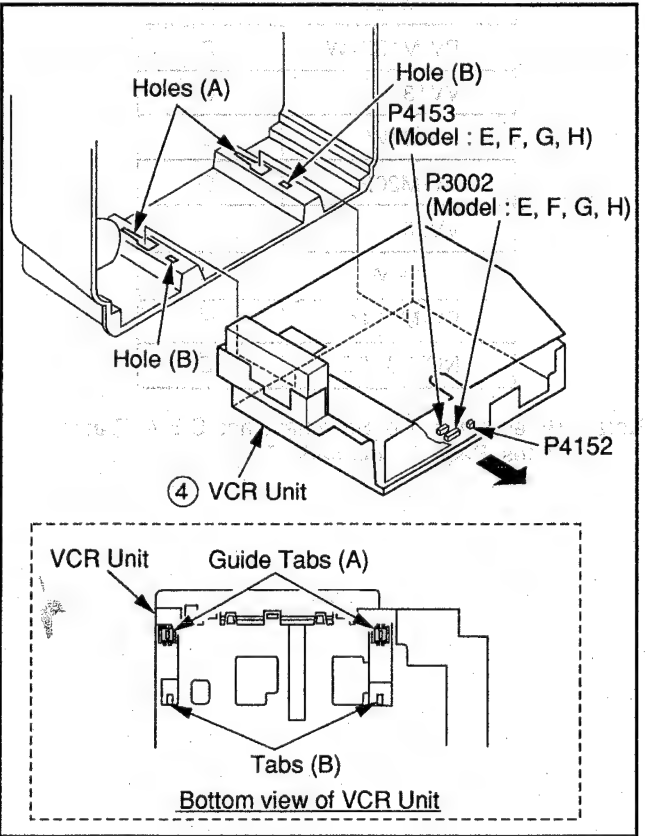


Fig. D5

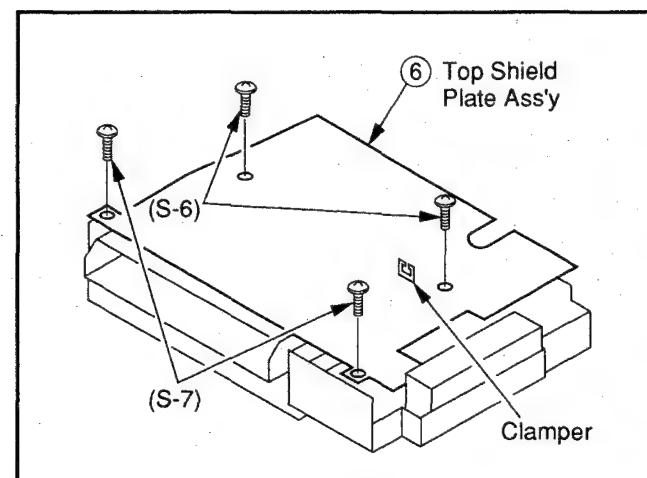


Fig. D6

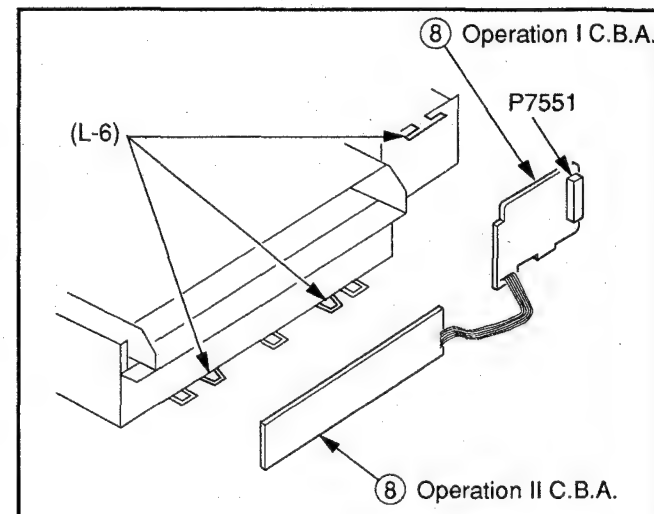


Fig. D8

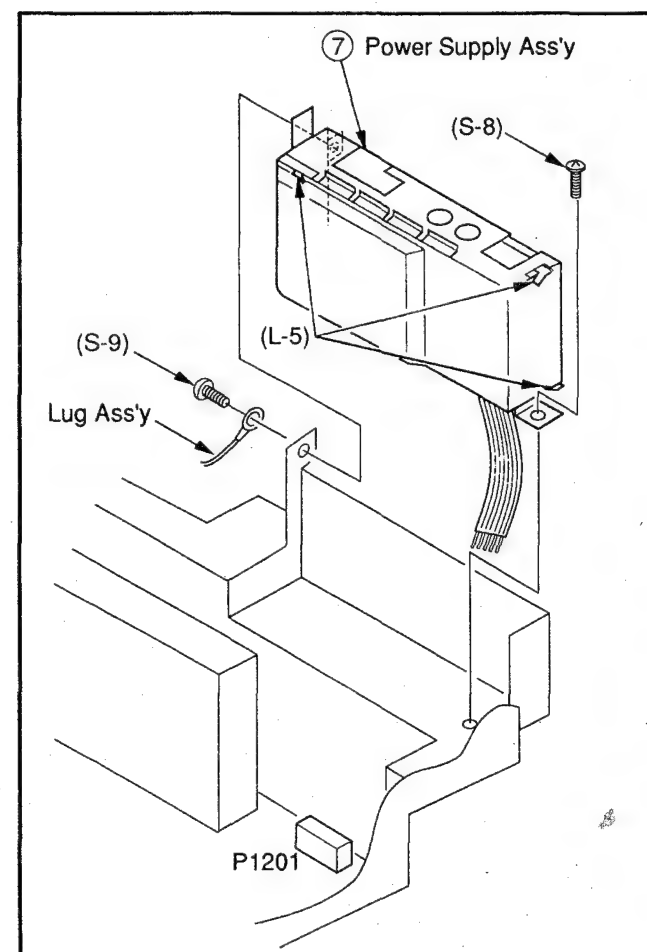


Fig. D7

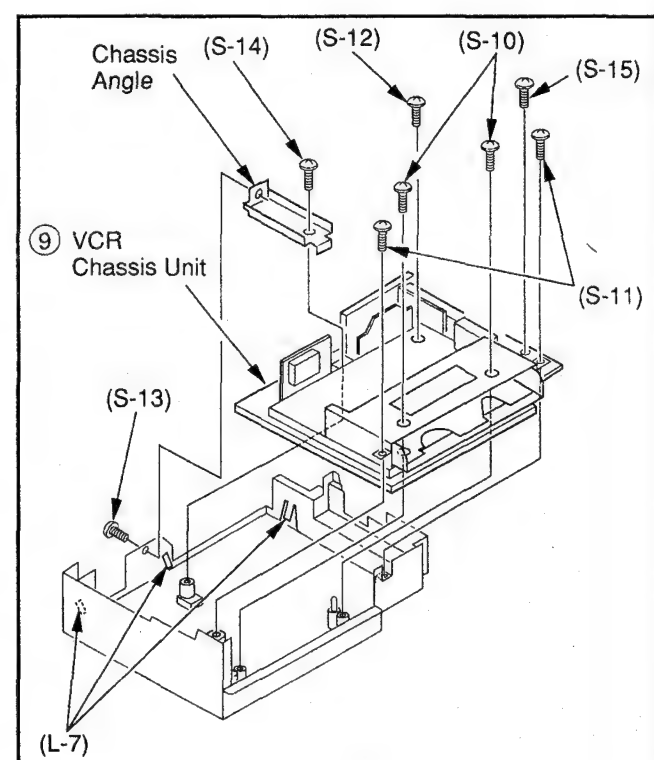


Fig. D9

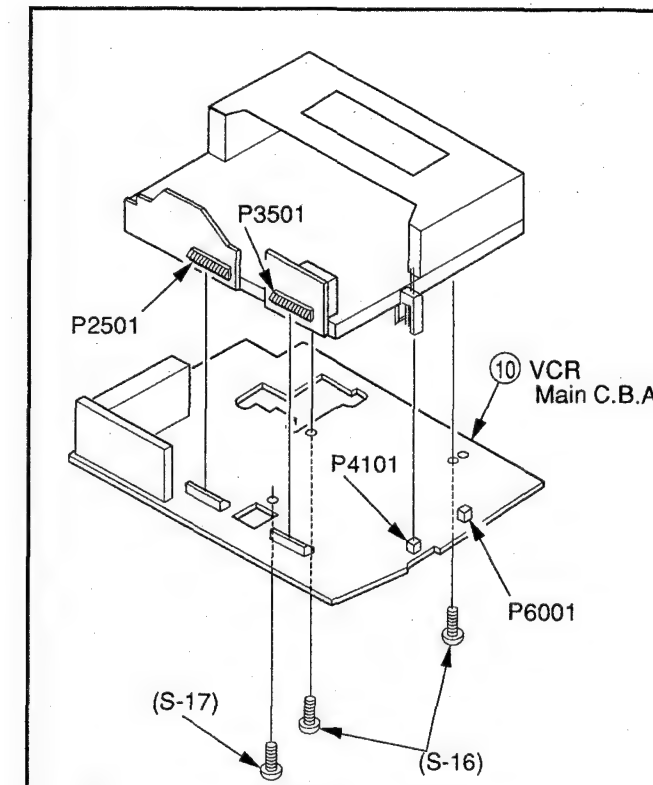


Fig. D10

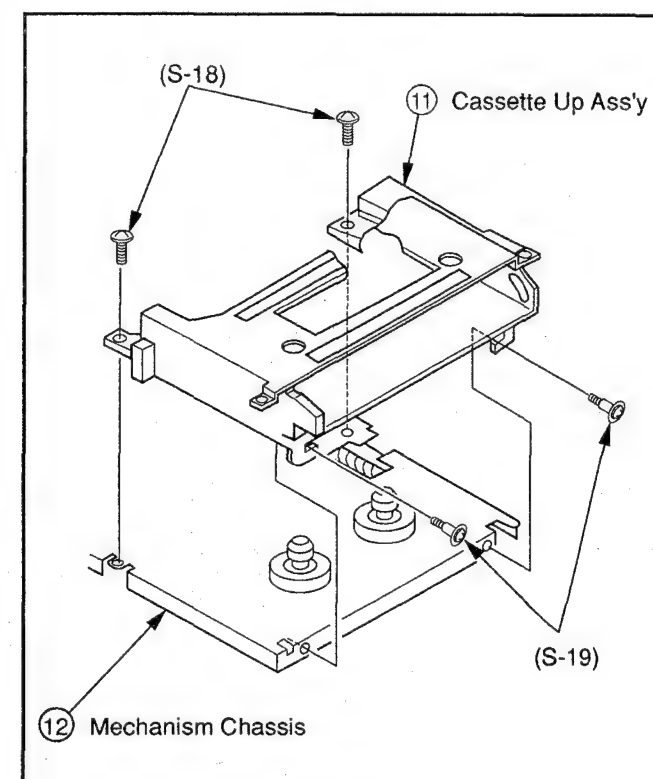
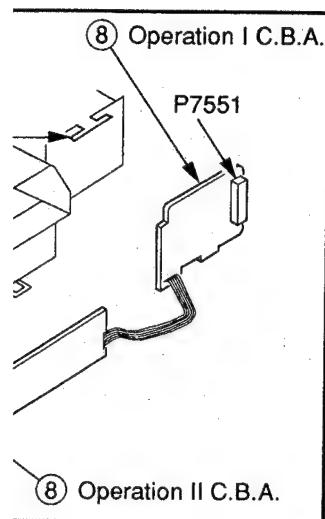


Fig. D11

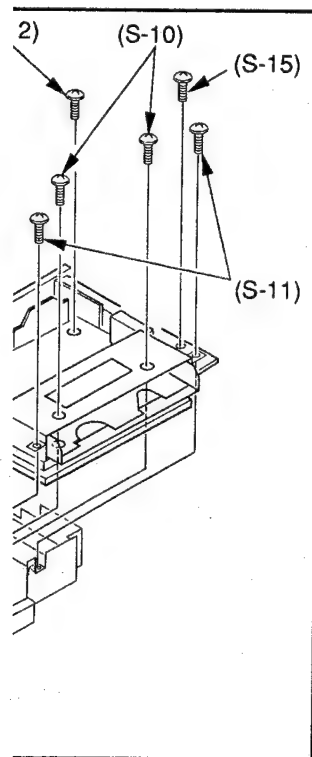
Reference <Notes> in Table 2 :

1. To remove P.C.B. Holder -A and P.C.B. Holder-B from TV Cavity, proceed with following steps,
 - 1) Discharge Anode to CRT Ground. Then remove the Anode Cap.
 - 2) Disconnect connector (C12) on CRT C.B.A..
 - 3) Carefully pull out CRT C.B.A. from CRT Unit.
 - 4) Disconnect Deflection Yoke Connector on TV Main C.B.A. and Degaussing Coil Connector on TV Power C.B.A.
 - 5) Disconnect connectors (K1, K2, K6) on TV Main C.B.A. coming from VCR Main C.B.A. and connector (B1) on TV Power C.B.A. coming from VCR Main C.B.A. and connector (B2) on TV Power C.B.A. coming from Power Supply Ass'y.
 - 6) Carefully pull out P.C.B. Holder -A and P.C.B. Holder -B.
2. To remove TV Power C.B.A. from P.C.B. Holder-B, proceed with following steps,
 - 1) Remove 2 Screws (S-2).
 - 2) Remove P.C.B. Holder-B from P.C.B. Holder-A by unlocking Locking Tab (L-1) and 2 Locking Tabs (L-2).
 - 3) Remove 2 Screws (S-3).
 - 4) Remove TV Power C.B.A. from P.C.B. Holder-B by unlocking 2 Locking Tabs (L-3).
- To remove TV Main C.B.A. from P.C.B. Holder -A, proceed with following steps,
 - 1) Remove Screw (S-4).
 - 2) Remove TV Main C.B.A. from P.C.B. Holder-A by unlocking 2 Locking Tabs (L-4).
3. To remove VCR Unit from TV Cavity, proceed with following steps,
 - 1) Lift up the rear side of VCR Unit slightly to raise Tabs (B).
 - 2) Slide VCR Unit out as far as you can.
 - 3) Push up front side of VCR Unit from underneath in order to raise 2 Guide Tabs (A) into place.
 - 4) Pull VCR Unit all the way out from TV Cavity.

- 3a. When reinstalling :
Ensure that the VCR Unit is mounted all the way to the Front before reinstalling the TV Assembly as shown in Fig. D12-1 : Model A, B, C, D or Fig. D12-2 : Model E, F, G, H.
4. Place unit face down on a soft cloth before removing the CRT Unit.
5. When removing the Shield Case of the Power Supply Ass'y, twist and straighten 3 Locking Tabs (L-5) on the Power Supply Ass'y in Fig. D7. Then remove the Shield Case by pulling it away from the Power Supply Ass'y.
6. When removing the VCR Chassis Unit, refer to SERVICE NOTES AND CAUTIONS Item B-2.
7. When reinstalling the Cassette Up Ass'y, mechanical adjustment (alignment) should be performed for proper operation. Please refer to Adjustment of Cassette Up Ass'y and Chassis.
8. When reinstalling the Mechanism Chassis to the VCR Main C.B.A., refer to SERVICE NOTES AND CAUTIONS Item H.



08



09

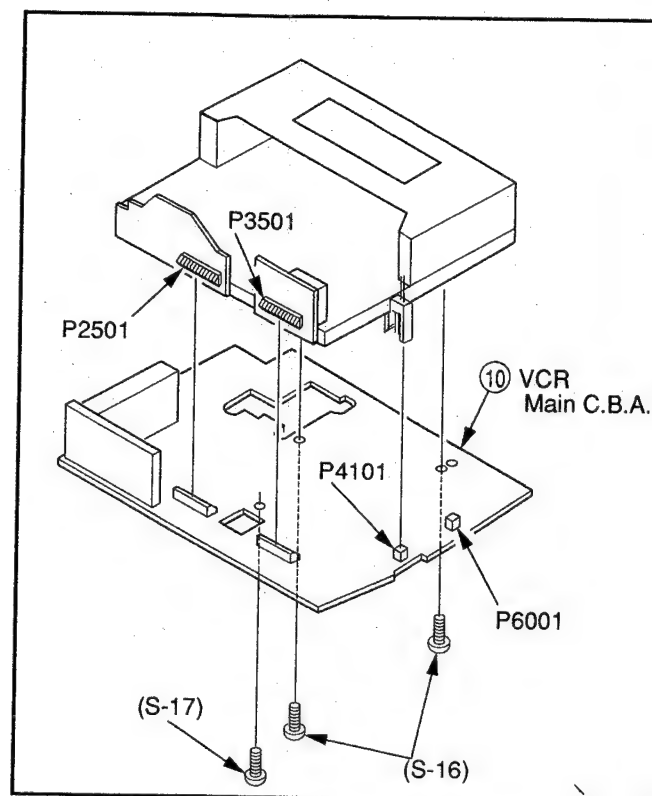


Fig. D10

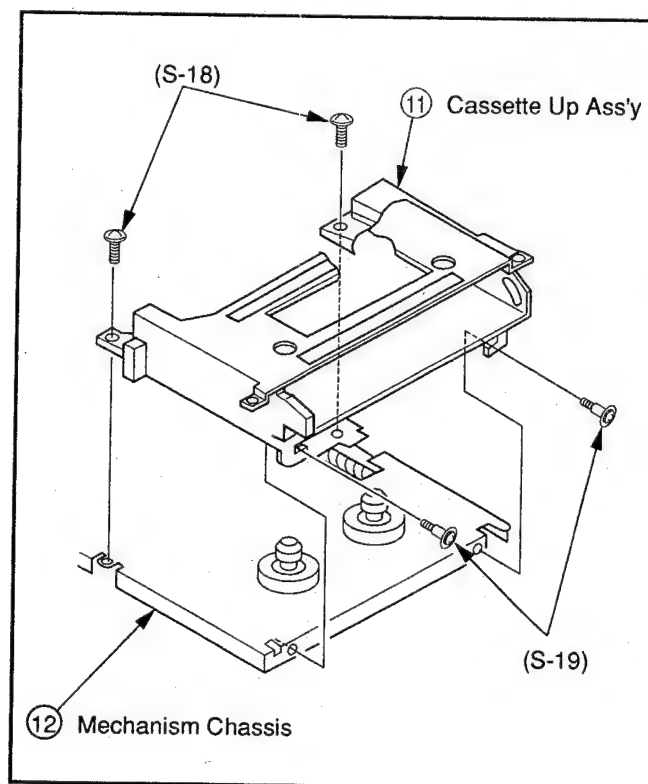


Fig. D11

Reference <Notes> in Table 2 :

1. To remove P.C.B. Holder -A and P.C.B. Holder-B from TV Cavity, proceed with following steps,
 - 1) Discharge Anode to CRT Ground. Then remove the Anode Cap.
 - 2) Disconnect connector (C12) on CRT C.B.A.
 - 3) Carefully pull out CRT C.B.A. from CRT Unit.
 - 4) Disconnect Deflection Yoke Connector on TV Main C.B.A. and Degaussing Coil Connector on TV Power C.B.A.
 - 5) Disconnect connectors (K1, K2, K6) on TV Main C.B.A. coming from VCR Main C.B.A. and connector (B1) on TV Power C.B.A. coming from VCR Main C.B.A. and connector (B2) on TV Power C.B.A. coming from Power Supply Ass'y.
 - 6) Carefully pull out P.C.B. Holder -A and P.C.B. Holder -B.
2. To remove TV Power C.B.A. from P.C.B. Holder-B, proceed with following steps,
 - 1) Remove 2 Screws (S-2).
 - 2) Remove P.C.B. Holder-B from P.C.B. Holder-A by unlocking Locking Tab (L-1) and 2 Locking Tabs (L-2).
 - 3) Remove 2 Screws (S-3).
 - 4) Remove TV Power C.B.A. from P.C.B. Holder-B by unlocking 2 Locking Tabs (L-3).
- To remove TV Main C.B.A. from P.C.B. Holder -A, proceed with following steps,
 - 1) Remove Screw (S-4).
 - 2) Remove TV Main C.B.A. from P.C.B. Holder-A by unlocking 2 Locking Tabs (L-4).
3. To remove VCR Unit from TV Cavity, proceed with following steps,
 - 1) Lift up the rear side of VCR Unit slightly to raise Tabs (B).
 - 2) Slide VCR Unit out as far as you can.
 - 3) Push up front side of VCR Unit from underneath in order to raise 2 Guide Tabs (A) into place.
 - 4) Pull VCR Unit all the way out from TV Cavity.
- 3a. When reinstalling :

Ensure that the VCR Unit is mounted all the way to the Front before reinstalling the TV Assembly as shown in Fig. D12-1 : Model A, B, C, D or Fig. D12-2 : Model E, F, G, H
4. Place unit face down on a soft cloth before removing the CRT Unit.
5. When removing the Shield Case of the Power Supply Ass'y, twist and straighten 3 Locking Tabs (L-5) on the Power Supply Ass'y in Fig. D7. Then remove the Shield Case by pulling it away from the Power Supply Ass'y.
6. When removing the VCR Chassis Unit, refer to SERVICE NOTES AND CAUTIONS Item B-2.
7. When reinstalling the Cassette Up Ass'y, mechanical adjustment (alignment) should be performed for proper operation. Please refer to Adjustment of Cassette Up Ass'y and Chassis.
8. When reinstalling the Mechanism Chassis to the VCR Main C.B.A., refer to SERVICE NOTES AND CAUTIONS Item H.

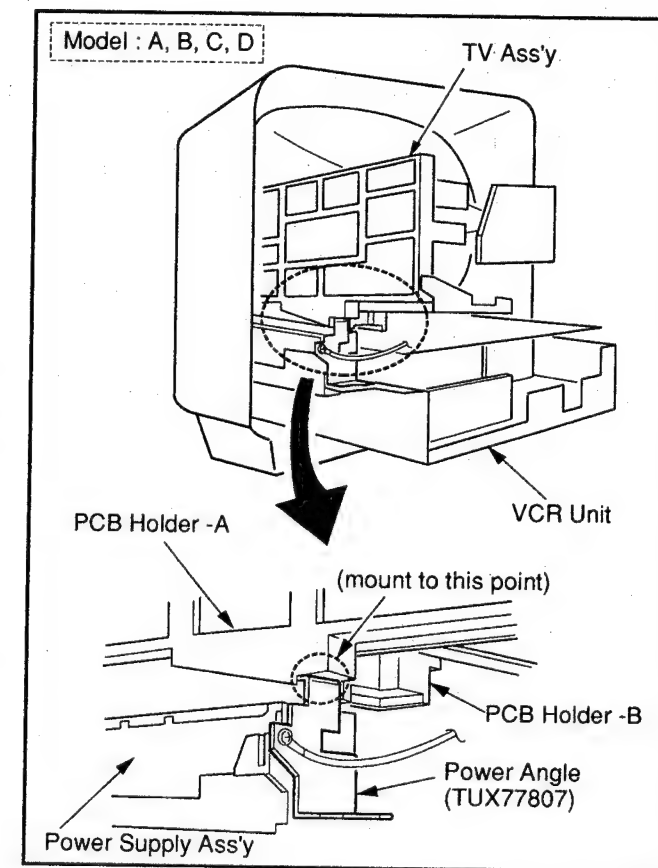


Fig. D12-1

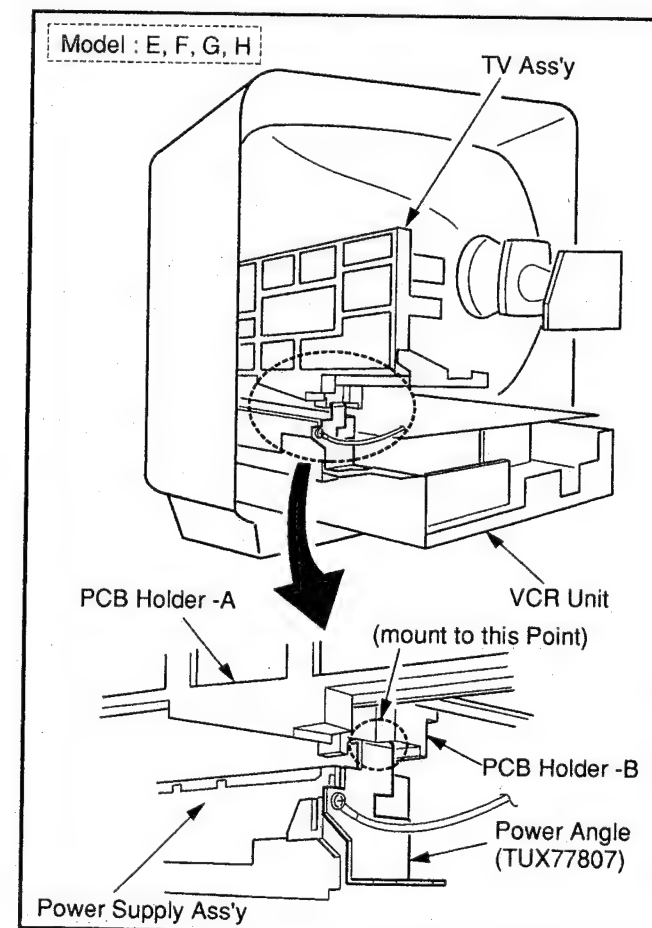


Fig. D12-2

2. PROCEDURE FOR CLEANING UPPER CYLINDER UNIT

- Position the Video Head to permit access for cleaning. Hold the Upper Cylinder to keep it from turning while cleaning it.
- Gently rub the Video Heads in the direction of tape travel with a Head Cleaning Stick (VFK27) moistened with Ethanol.
- Repeat for the other Video Heads.

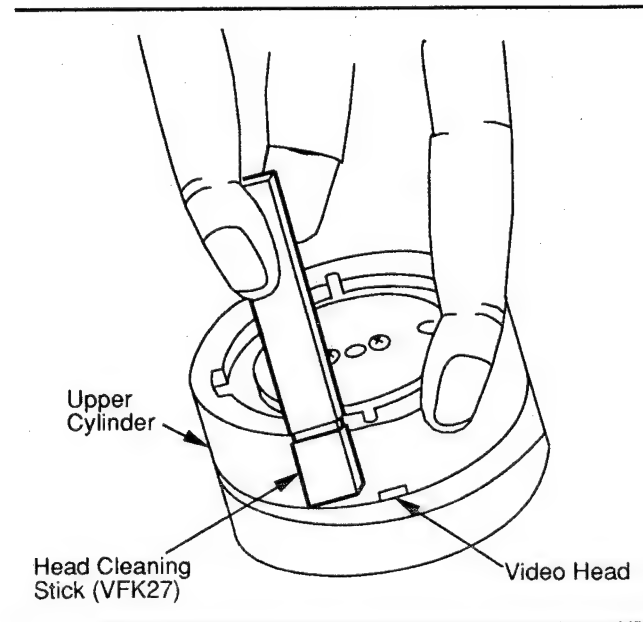


Fig. M1

Note :

- Do not rub vertically.
- Do not apply any pressure to the head. If contaminant is not easily removed, continued gentle wiping will usually remove it.
- Clean the Cylinder surface with Ethanol if fingerprints are present after cleaning the Video Heads.

3. ADJUSTMENT PROCEDURES

1. REPLACEMENT OF UPPER CYLINDER UNIT

1-1. REMOVAL OF UPPER CYLINDER UNIT

Work with extreme care when removing or replacing the Upper Cylinder Unit. Do not touch Video Heads during servicing.

- Remove 2 Screws with Washers (A) and gently lift the Upper Cylinder Unit from the shaft.

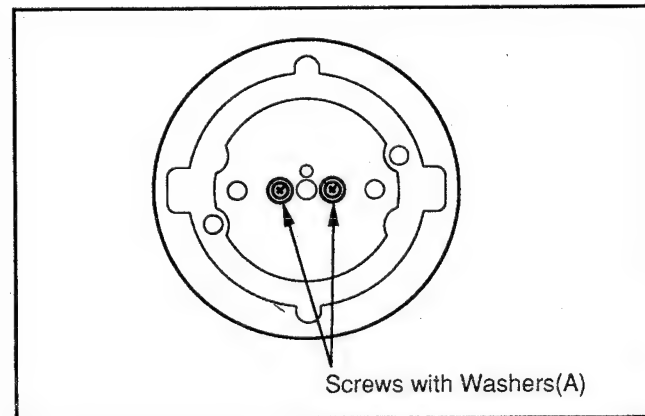


Fig. M2

1-2. CLEANING OF D.D. CYLINDER SHAFT AND THE SURFACE

- Before reinstalling a new unit, clean the D.D. Cylinder Shaft and the surface that engages with the Upper Cylinder with a soft cloth dampened with Ethanol in Fig. M3.

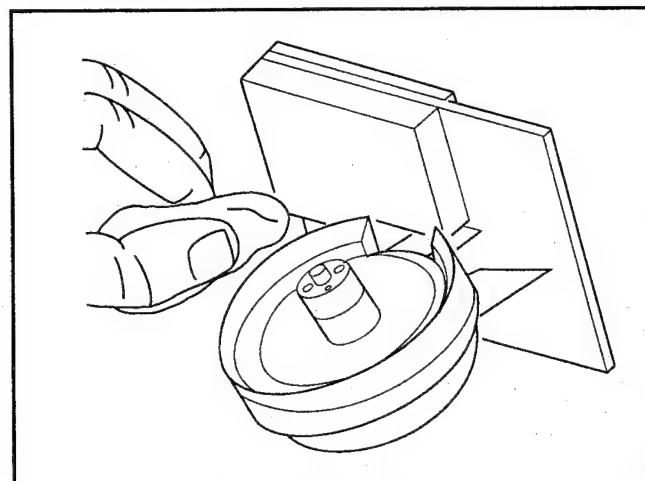


Fig. M3

1-3. REPLACEMENT OF UPPER CYLINDER UNIT

- Install the new Upper Cylinder Unit carefully so that the hole in the new Upper Cylinder Unit is properly matched to align the hole on the Upper Cylinder to the center of the indentation on the D.D. Cylinder. For details on the installation position, refer to Fig. M4.

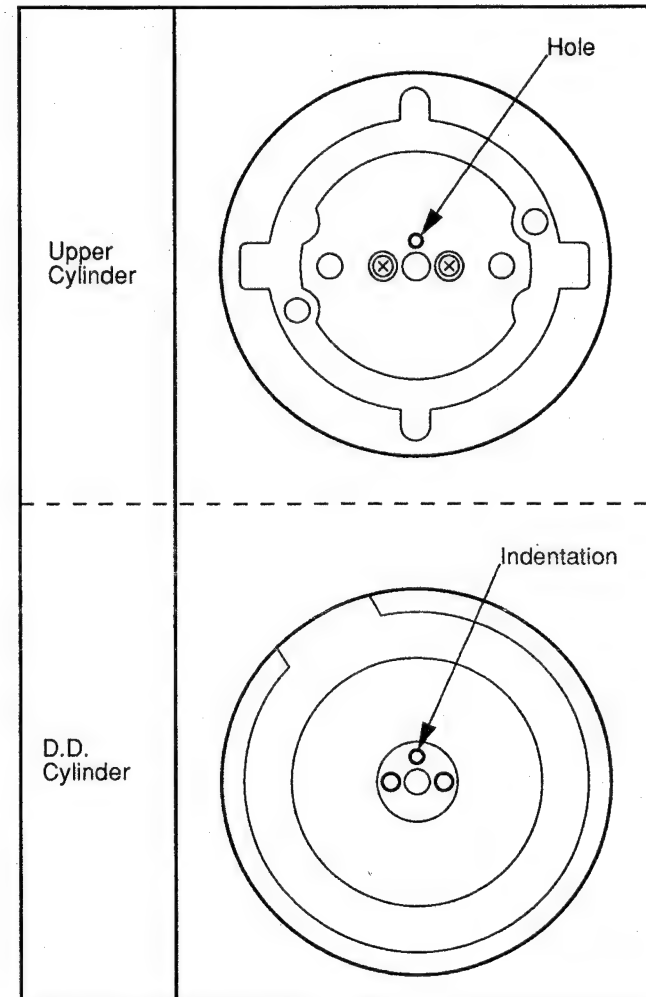


Fig. M4

- Tighten 2 Screws with Washers (A) shown in Fig. M2.
- Clean the Upper Cylinder with a deerskin swab (Head Cleaning Stick) saturated with Ethanol.

Note :

Upon completion of replacement, perform "TAPE INTERCHANGEABILITY ADJUSTMENT," especially "HORIZONTAL POSITION ADJUSTMENT OF A/C HEAD."

2. REPLACEMENT OF D.D. CYLINDER UNIT

Work with extreme care when removing or replacing the D.D. Cylinder Unit. Do not touch Video Heads during servicing.

- Remove the VCR Chassis Unit.
- Remove the VCR Main C.B.A.
- Place the Mechanism Chassis and Cassette Up Ass'y upside down.
- Remove Black Screw (A) and the Earth Plate Unit.
- Remove 3 Screws (B).
- Place the Mechanism Chassis and Cassette Up Ass'y in a normal position.
- Remove 2 Screws (C) and then lift the D.D. Cylinder Unit and Head Amp Ass'y slowly from the top side.

Note :

Since there is very little clearance between the D.D. Cylinder Unit and the chassis, remove the D.D. Cylinder Unit gently and carefully.

- Unsolder P3502 and P3503 on the Head Amp Ass'y and then remove the Head Amp Ass'y from the D.D. Cylinder Unit.
- Place the Mechanism Chassis and the Cassette Up Ass'y upside down.

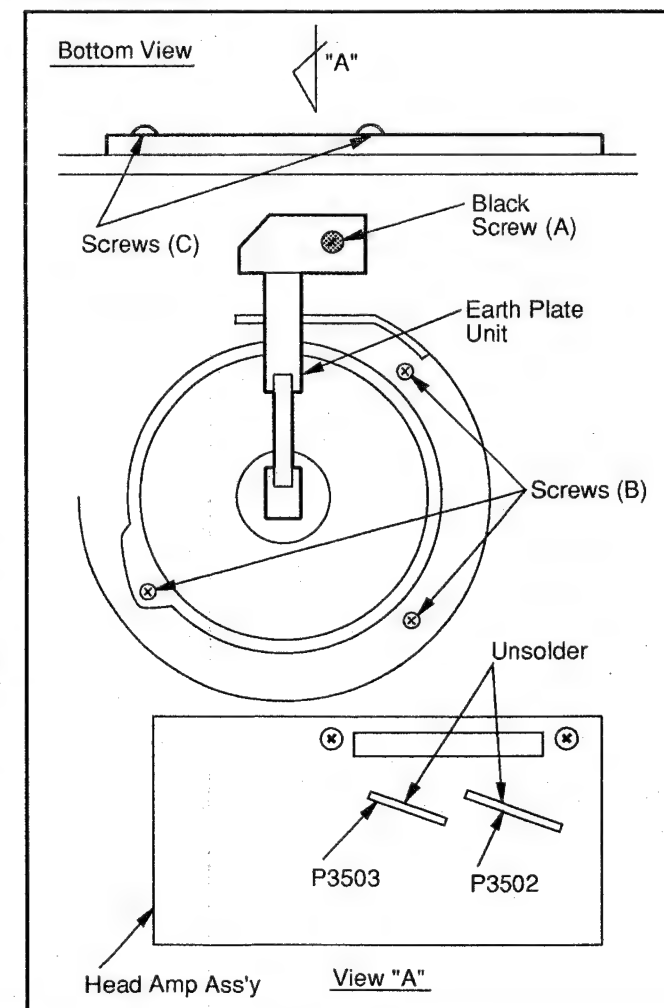
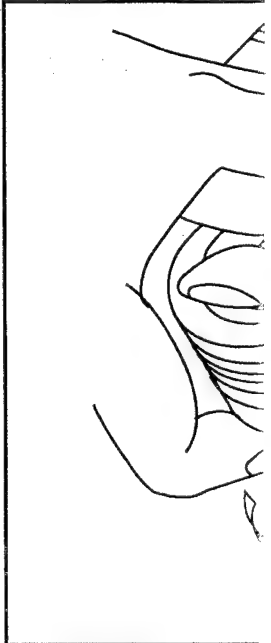


Fig. M5-1

- Reinstall the new D.D. Cylinder Unit on to the chassis by reversing the procedure previously described.

Note :

- Reinstall the new projections on the lower surface of the Cylinder Unit to the Fig. M5-2). Hold them as not to touch the Cylinder. If any of them with a deer saturated with Ethanol.



- Upon completion ensure that the D.D. maintenance is re-INTERCHANGEABLE (VFMS0001H6).
- Adjustment of the installation. Refer

3. CONFIRMATION PLATE INSTALLATION

Purpose :

To optimize the position

Symptom of Misadjustment May cause Cylinder

Remove the Mechanism see if the Earth Plate Unit is more than 1mm (but not more than 2mm) from the center of the plate to the in Fig. M6. If required, a loosening Black Screw

Note :

Never install the Earth Plate Unit (on the left side of the plate) always within a maximum center of this shaft.

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SHAFT

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1-3. REPLACEMENT OF UPPER CYLINDER UNIT

1. Install the new Upper Cylinder Unit carefully so that the hole in the new Upper Cylinder Unit is properly matched to align the hole on the Upper Cylinder to the center of the indentation on the D.D. Cylinder. For details on the installation position, refer to Fig. M4.

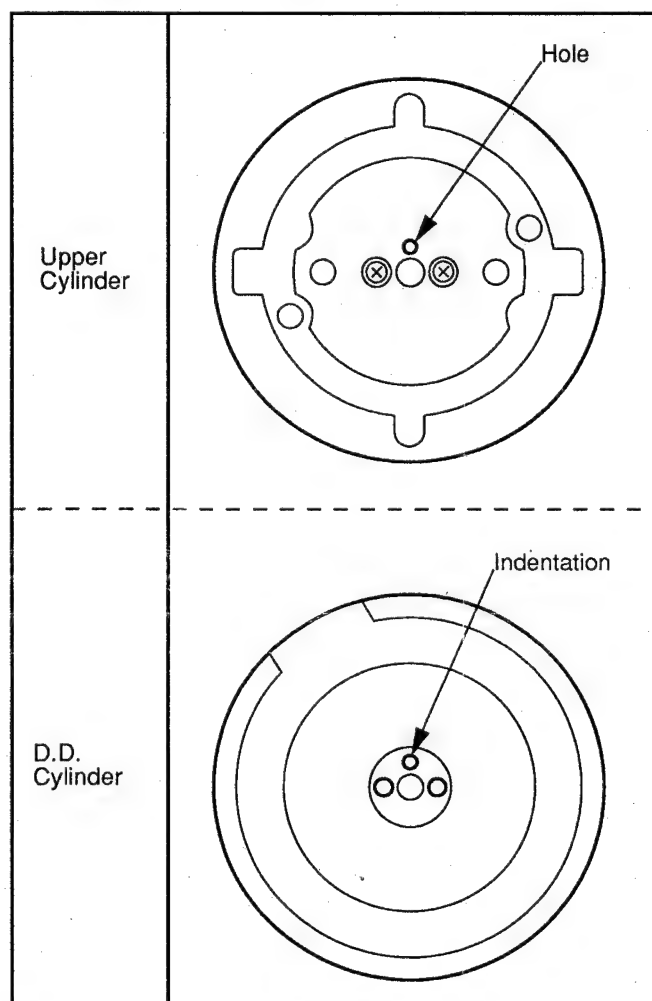


Fig. M4

2. Tighten 2 Screws with Washers (A) shown in Fig. M2.
3. Clean the Upper Cylinder with a deerskin swab (Head Cleaning Stick) saturated with Ethanol.

Note :

Upon completion of replacement, perform "TAPE INTERCHANGEABILITY ADJUSTMENT," especially "HORIZONTAL POSITION ADJUSTMENT OF A/C HEAD."

2. REPLACEMENT OF D.D. CYLINDER UNIT

Work with extreme care when removing or replacing the D.D. Cylinder Unit. Do not touch Video Heads during servicing.

1. Remove the VCR Chassis Unit.
2. Remove the VCR Main C.B.A.
3. Place the Mechanism Chassis and Cassette Up Ass'y upside down.
4. Remove Black Screw (A) and the Earth Plate Unit.
5. Remove 3 Screws (B).
6. Place the Mechanism Chassis and Cassette Up Ass'y in a normal position.
7. Remove 2 Screws (C) and then lift the D.D. Cylinder Unit and Head Amp Ass'y slowly from the top side.

Note :

Since there is very little clearance between the D.D. Cylinder Unit and the chassis, remove the D.D. Cylinder Unit gently and carefully.

8. Unsolder P3502 and P3503 on the Head Amp Ass'y and then remove the Head Amp Ass'y from the D.D. Cylinder Unit.
9. Place the Mechanism Chassis and the Cassette Up Ass'y upside down.

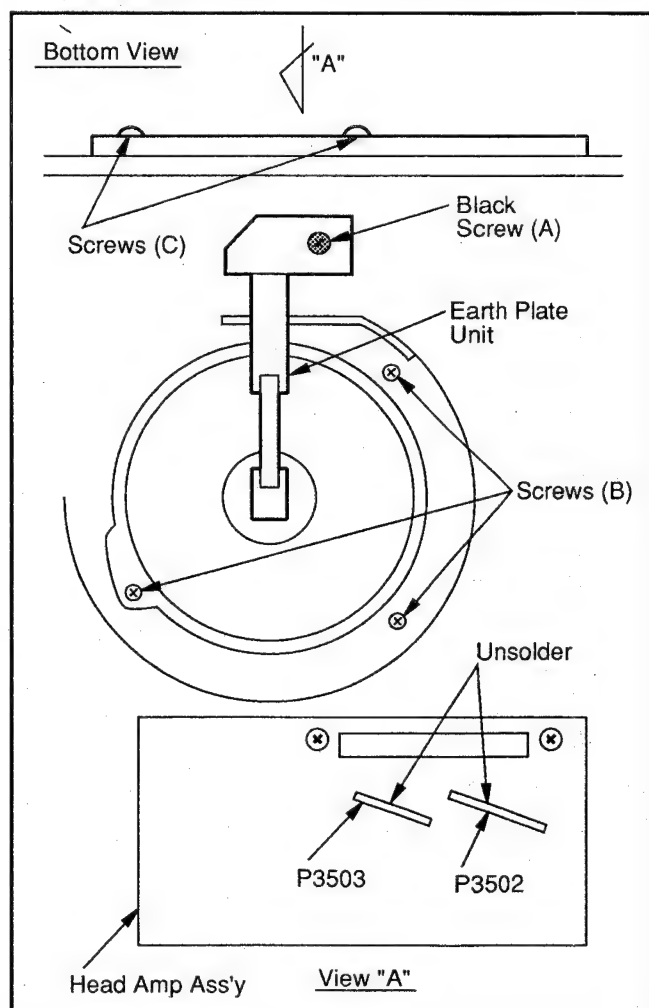


Fig. M5-1

10. Reinstall the new D.D. Cylinder Unit on to the chassis by reversing the procedure previously described.

Note :

1. Reinstall the new D.D. Cylinder Unit so that the 2 projections on the Cylinder Base meet the 2 holes on the lower surface of the D.D. Cylinder. Then fit the new D.D. Cylinder Unit to the chassis by turning it (refer to Fig. M5-2). Hold the D.D. Cylinder with extreme care so as not to touch the Heads or the tape path on the Cylinder. If any of these parts are touched, then clean them with a deerskin swab (Head Cleaning Stick) saturated with Ethanol.

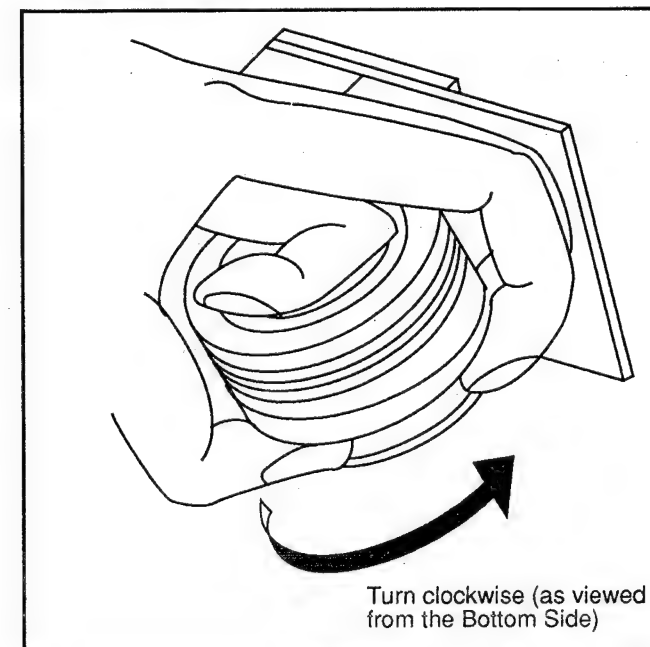


Fig. M5-2

2. Upon completion of the replacement procedure, be sure that the D.D. Cylinder Unit works. If any further maintenance is required, perform "TAPE INTERCHANGEABILITY" with the alignment tape (VFMS0001H6).
3. Adjustment of the Earth Plate Unit is required after installation. Refer to Item 3 below.

3. CONFIRMATION OF GROUNDING PLATE INSTALLATION POSITION

Purpose :

To optimize the position of the Earth Plate Unit.

Symptom of Misadjustment :

May cause Cylinder rotating buzz.

Remove the Mechanism Unit. Place it upside down. Check to see if the Earth Plate Unit is properly set in a position just less than 1mm (but not more than 1mm), as measured from the center of the plate to the center of the Cylinder Shaft as shown in Fig. M6. If required, adjust the Earth Plate Unit position by loosening Black Screw (A).

Note :

Never install the Earth Plate Unit in the opposite position (on the left side of the center of the Cylinder Shaft), but always within a maximum of 1mm to the right side of the center of this shaft.

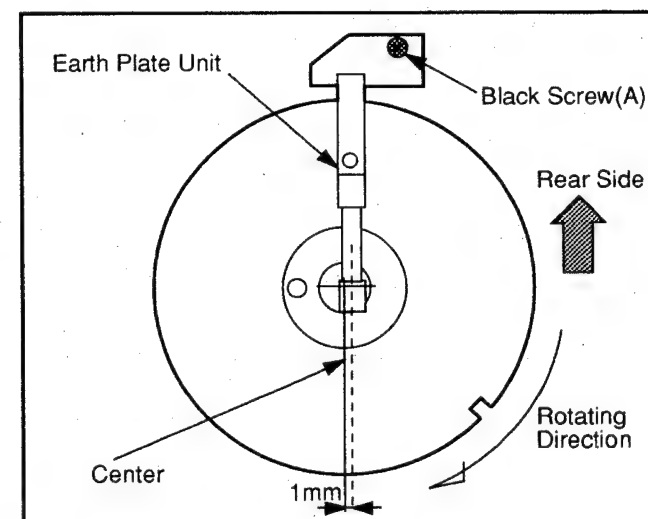


Fig. M6

4. POSITION ADJUSTMENT OF TENSION POST (PRELIMINARY)

Purpose :

To feed a constant tension to the tape so that the tape runs with stability, by performing a preliminary adjustment.

Symptom of Misadjustment :

- 1) If the adjusted value is below the specification, the tape tension is not sufficient, thus causing a tape slack to occur.
- 2) If the adjusted value is above the specification, the tape tension is too high, thus causing tape damage to occur.

***Equipment Required :**

2mm Hex. Wrench (Purchase Locally)

1. Place the Unit in the Service Position (1).
2. Then remove the Cassette Up Ass'y.
3. Place a jumper between TP6001 and GND.
4. Turn ON the Power Switch and press the Play Button to complete the loading operation sequence.
5. As soon as loading is completed, insert the Hex. Wrench(2mm) into the Tension Band Fastener and adjust it (only counterclockwise) as indicated by the arrow so that the outside edge of the Tension Post lines up with the outside of the P1 post. (See Fig. M7)
6. Remove the Hex. Wrench (2mm).
7. Press the Stop/Eject Button to complete the unloading operation Sequence.
8. Remove the jumper between TP6001 and GND.
9. Reinstall the Cassette Up Ass'y and cabinet parts.

8-C. CONFIRMATION OF TILT OF A/C HEAD

Purpose :

To confirm that the tape runs smoothly. In particular, confirm that the tape properly picks up the Audio Signal at the upper part of the head and the Control Signal at the lower part of the head.

Symptom of Misadjustment :

If the tilt of the A/C Head is poorly adjusted, the tape will eventually be damaged. An intermittent Blue screen may be seen in Playback.

1. Play back a T120 Cassette tape and confirm that the tape runs properly between the lower and upper limits of the P4 post. Also confirm that the tape runs smoothly.
2. If adjustment is required, turn Black Screw (B), shown in Fig. M13, clockwise until curling is apparent at the lower edge of P4. Then turn Black Screw (B) counterclockwise until the curling smooths out.

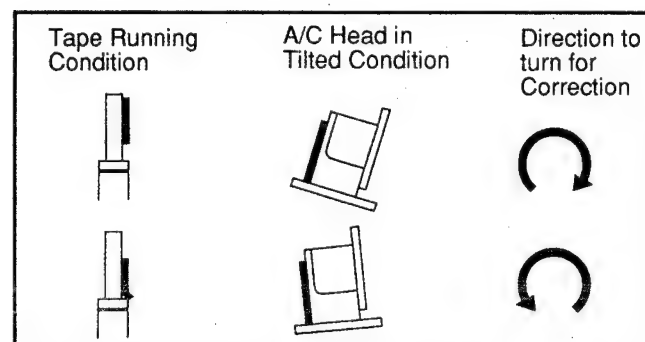


Fig. M14

8-D. AZIMUTH ADJUSTMENT OF A/C HEAD

Purpose :

To adjust the position and height of the A/C Head so that it meets the tape tracks properly.

Symptom of Misadjustment :

If the position of the A/C Head is not properly adjusted, the Audio S/N Ratio is poor.

1. Connect the oscilloscope to the audio output jack on the rear side of the deck.
2. Play back the monoscope portion (6KHz, Mono) of the alignment tape (VFMS0001H6).
3. Adjust Black Screw (C) on the head base, shown in Fig. M13, so that the output level is at maximum.

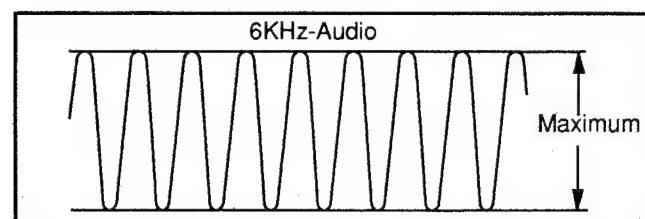


Fig. M15

4. Readjust Black Screw (A), shown in Fig. M13, for maximum output.
5. Disconnect the oscilloscope.

8-E. HORIZONTAL POSITION ADJUSTMENT OF A/C HEAD

Purpose :

To adjust the Horizontal Position of the A/C Head.

Symptom of Misadjustment :

If the Horizontal Position of the A/C Head is not properly adjusted, a maximum envelope cannot be obtained at the Neutral Position of the Tracking Control Circuit.

Place a jumper between TP6003 and +5V(TP6009) on the System Control Section of the VCR Main C.B.A. to defeat Auto Tracking.

1. Eject the tape and insert it again, to access the Neutral Tracking position. Connect the oscilloscope to TP3002 on the Video Signal Process Section of the Main C.B.A. Use TP6205 as a trigger.
2. Play back the monoscope portion of the alignment tape (VFMS0001H6) and confirm that the RF envelope appears, as in Fig. M17-1.
3. If adjustment is required, loosen the Black Screw with 2 Washers (D) and tighten the Screw lightly. Set the H-Position ADJ. Screwdriver into the Hole (E) shown in Fig. M16. Then slowly turn the fixture either clockwise or counterclockwise so that the envelope is at maximum.

Model : A, B, C, D, E, F, G

4. Tighten the Black Screw with 2 Washers (D).
5. Remove the Jumper between TP6003 and +5V(TP6009).
- Model : H
4. Before finding the center of the maximum period of the envelope, rotate the fixture back and forth slightly to confirm the limits on either side of the maximum period.
5. Push the Tracking Control Up Button (on the IR Transmitter) several times (count the number of times pushed) until the maximum envelope is reduced to 1/2.
6. Reset the tracking to the neutral position by ejecting the tape and reinserting it. Push the Tracking control DOWN Button (on the IR Transmitter) several times (count the number of times pushed) until the maximum envelope is reduced to 1/2.
7. If the number of pushes is not the same, then loosen the Black Screw with 2 Washers (D) and set the H-Position ADJ. Screwdriver into the Hole (E) shown in Fig. M16. Then find the center point. Then repeat the above procedure to determine the center point.
8. Tighten the Black Screw with 2 Washers (D).
9. Remove the Jumper between TP6003 and +5V(TP6009).

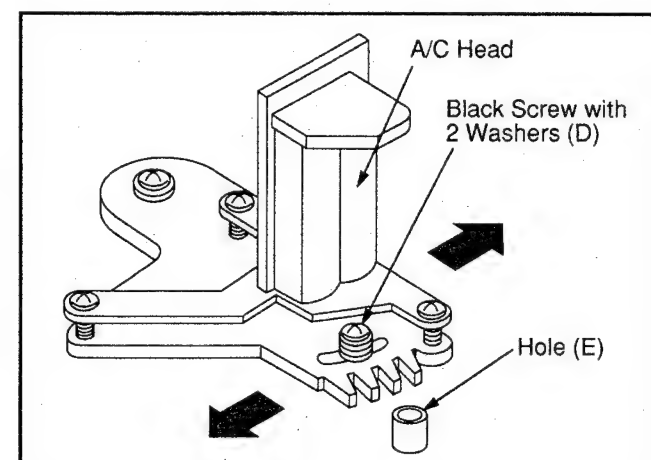


Fig. M16

8-F. CONFIRMATION/ADJUSTMENT OF ENVELOPE OUTPUT

Purpose :

To achieve a satisfactory picture and secure precise tracking.

Symptom of Misadjustment :

If the envelope is output poorly, much noise will appear in the picture. Then the tracking will lose precision and the playback picture will be distorted by any slight variation of the tracking control circuit.

Place a jumper between TP6003 and +5V(TP6009) on the System Control Section of the VCR Main C.B.A. to defeat Auto Tracking.

1. Eject the tape and insert it again, to access the Neutral Tracking position. Connect the oscilloscope to TP3002 on the Video Signal Process Section of the VCR Main C.B.A. Use TP6205 as a trigger.
2. Play back the monoscope portion of the alignment tape (VFMS0001H6). Adjust the height of posts P2 and P3 while watching the scope display so you can make the envelope as flat as possible. ($V1/V\text{-max} \geq 0.7$, $V2/V\text{-max} \geq 0.8$)

If adjustment is required, turn the top of the post with a Post Adjustment Screwdriver. For adjustment of P2 and P3, refer to Item 8-A and its Note.

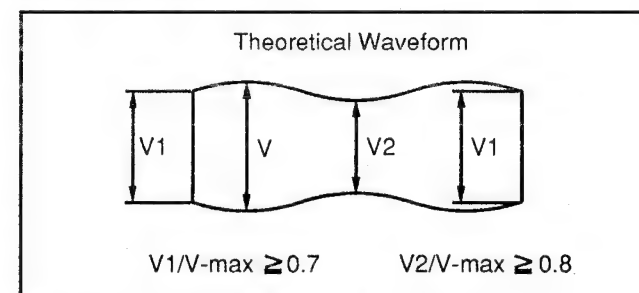


Fig. M17-1

3. When the scope display is as shown in Fig. M17-2, adjust the height of P2 so that the waveform looks like the one shown in Fig. M17-4.

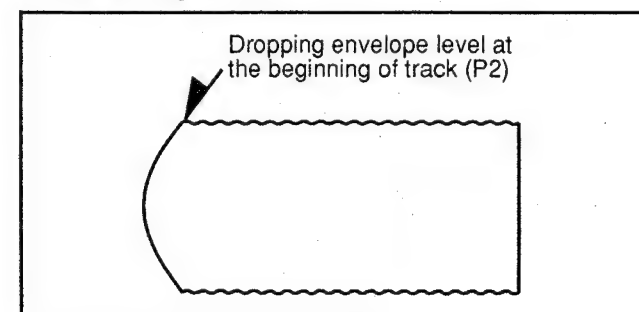


Fig. M17-2

4. When the scope display is as shown in Fig. M17-3, adjust the height of P3 so that the waveform looks like the one shown in Fig. M17-4.

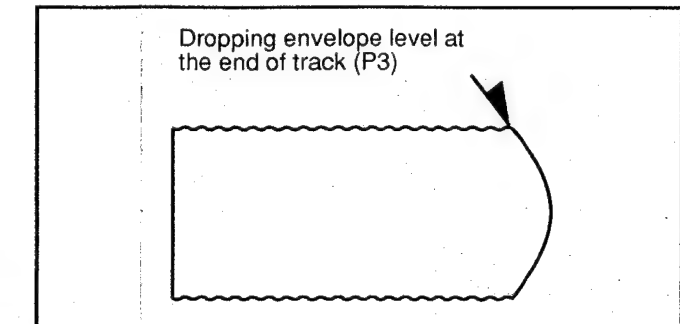


Fig. M17-3

5. When P2 and P3 are adjusted properly, there is no Envelope Drop at the beginning or end of the track as shown in Fig. M17-4. Remove the jumper wire.

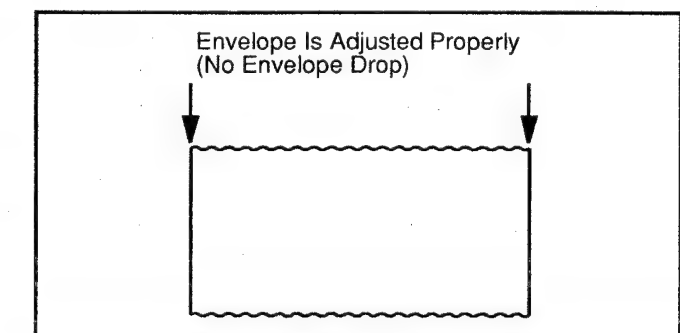


Fig. M17-4

Note:

Upon completion of the adjustment of P2 and P3, tighten the Black Lock Screws on P2 and P3 using the Lock Screw Wrench. Then confirm the Horizontal Position of the A/C Head by pushing the Tracking Control Up or Down Buttons alternately, using the IR Wireless Transmitter Unit, to check the symmetry of the envelope. If required, perform "Horizontal Position Adjustment of A/C Head."

9. ADJUST

Purpose :

To properly p

Symptom of Mis
If the FG Sig
cannot be ac

* Equipment Re
Oscilloscope

* Specification :

1. Remove the
down.
2. Remove the
3. Slightly loose
(#1 or #2 Phi
Fig. M18. Tu
FG Head tou
the clearance
4. Tighten 2 Bl
5. Reinstall the

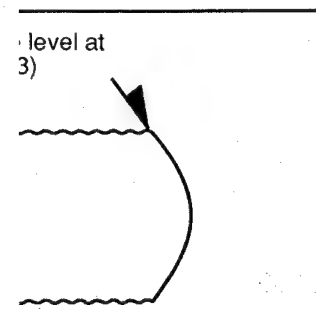


Capstan Unit

Note :

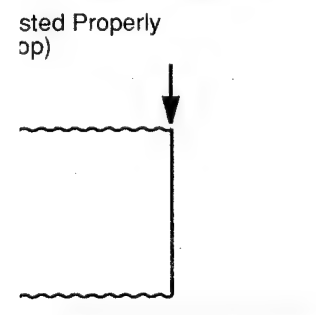
Do not to
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from the r

shown in Fig. M17-3, adjust
aveform looks like the one



7-3

properly, there is no
ng or end of the track as
the jumper wire.



7-4

ustment of P2 and P3, tighten
P2 and P3 using the Lock
rm the Horizontal Position of
the Tracking Control Up or
ly, using the IR Wireless
he symmetry of the envelope.
ontal Position Adjustment of

9. ADJUSTMENT OF FG HEAD GAP

Purpose :
To properly pick up the FG Signal.

Symptom of Misadjustment :
If the FG Signal is not properly picked up, Servo Operation
cannot be achieved.

* Equipment Required :
Oscilloscope

* Specification : $0.13 \pm 0.02\text{mm}$

1. Remove the VCR Chassis Unit and then place it upside down.
2. Remove the VCR Main C.B.A.
3. Slightly loosen 2 Black Screws (A) and set the Screwdriver (#1 or #2 Phillips Driver) into the Hole (B) shown in Fig. M18. Turn the screwdriver counterclockwise until the FG Head touches the rotor. Then turn it slightly clockwise to the clearance as specified.
4. Tighten 2 Black Screws (A) shown in Fig. M18.
5. Reinstall the VCR Main C.B.A.

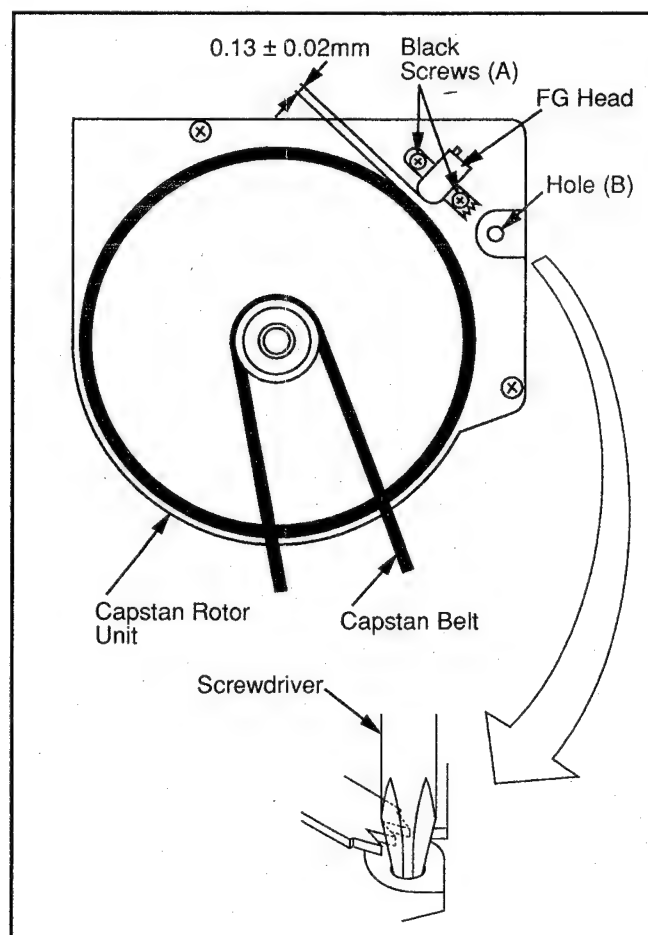


Fig. M18

Note :
Do not touch the outside circumference of the rotor surface with any tool and keep magnetic material away from the rotor magnet (especially metal particles).

(Confirmation)

- 1) Supply a Video Signal to the Video Input Jack on the rear side of the deck.
- 2) Insert a cassette tape and place the unit in SLP recording mode.
- 3) Connect the oscilloscope to Pin 12 and 13 of P2502 on the Capstan Motor Drive C.B.A.
Confirm that the signal level is greater than 10mVp-p.

10. REPLACEMENT OF CAPSTAN ROTOR OR STATOR UNIT

1. Remove the Capstan Belt (Fig. M18).
2. In the order described in the Disassembly and Assembly Procedures of Mechanism section, remove the Motor Block Ass'y.
3. Carefully pull out the Capstan Rotor Unit. Be careful not to lose the 2 Oil Seals shown in Fig. M19.

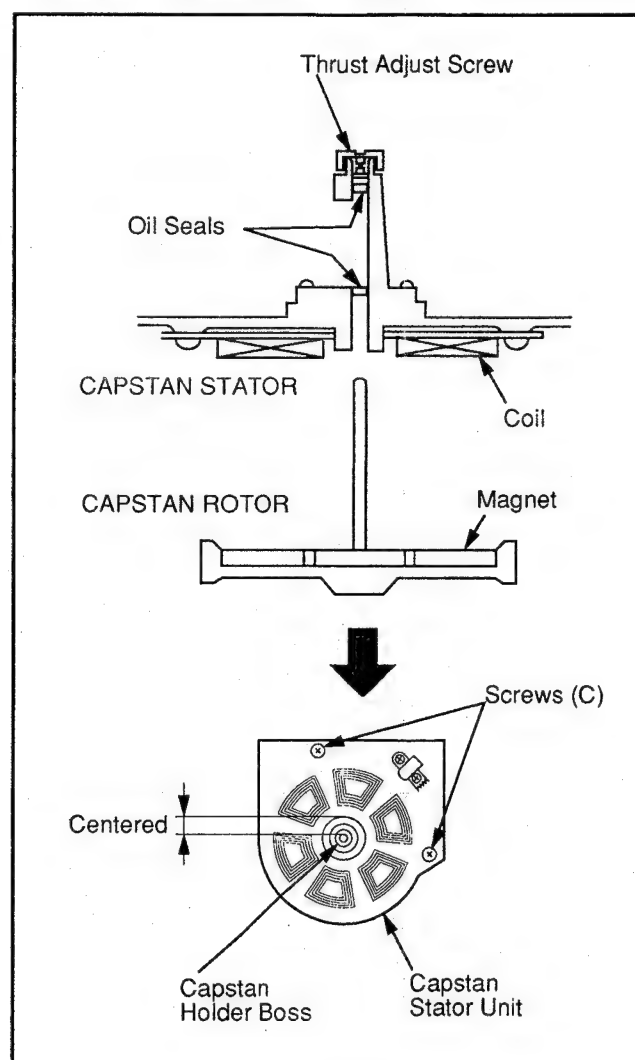


Fig. M19

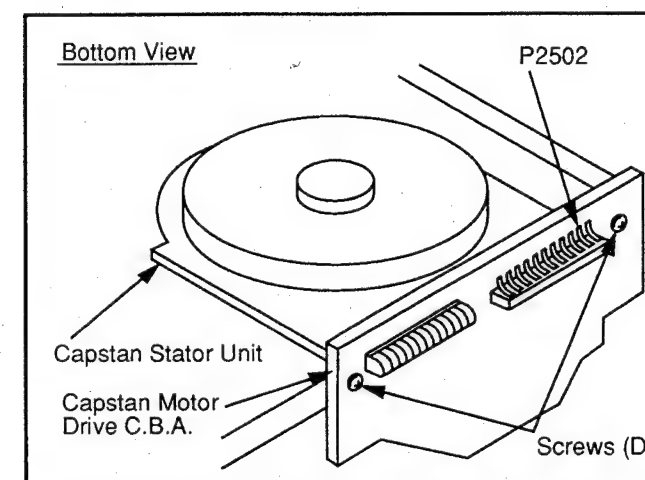


Fig. M20

4. Carefully unsolder P2502 on the Capstan Motor Drive C.B.A. Then remove the Capstan Motor Drive C.B.A. by removing 2 Screws (D) shown in Fig. M20.
5. Remove 2 Screws (C) and then lift out the Capstan Stator Unit.
6. Install the new Capstan Stator Unit and then tighten 2 Screws (C).

Note:
When reinstalling the Capstan Stator Unit, the Capstan Holder Boss must be centered within the hole in the Capstan Stator Unit.

7. Before installing the new Capstan Rotor Unit, loosen the Thrust Adjust Screw completely.
8. Install the new Capstan Rotor, carefully inserting the Oil Seals as shown in Fig. M19.

Important : See Caution Note below.

- Caution Note :
- 1) The replacement Capstan Rotor Unit is available only as a complete unit with a spring loaded Capstan Pulley.
 - 2) Hold the new Capstan Rotor Unit firmly when installing it, so the rotor will not be pulled toward the stator too quickly (due to magnetic force). Placing some paper on the coils before rotor installation may prevent accidental damage to the coils if the above caution is not observed.
 - 3) During installation, do not touch the Capstan Shaft with any hard material like drivers or tweezers.

9. Re-install the Capstan Motor Drive C.B.A. by tightening 2 Screws (D). Then carefully solder P2502 and re-install the Motor Block Ass'y.

----- ADJUSTMENT OF THRUST ADJUST SCREW AND OIL SEALS -----

10. Re-install the Capstan Belt and, while exerting pressure to turn the Clutch Unit, tighten the Thrust Adjust Screw slowly until the Capstan Rotor just starts turning.
11. At the point where the Capstan Rotor starts turning, tighten the Thrust Adjust Screw another 180° clockwise.
12. Upon completion of the above procedure, confirm that the Oil Seals are positioned as shown in Fig. M21 and ensure that the oil seal does not contact the Pressure Roller or P5 Arm Unit. Then, wipe off the Capstan Shaft to remove oil, grease, and dust.

Note :

1. During production, the Lower Oil Seal is positioned 6mm above the bushing as shown in Fig. M21. During servicing, the seal should be either 6mm or just above the bushing.
2. Clean the Capstan Post whenever an Oil Seal is moved.

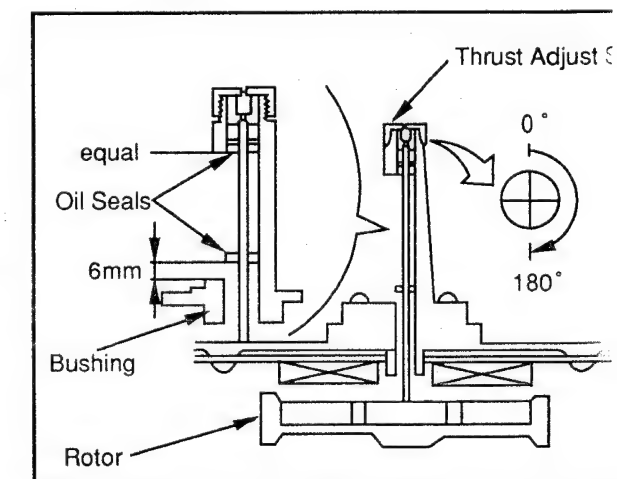


Fig. M21

11. DISASSEMBLY/ASSEMBLY PROCEDURES OF MECHANISM

This procedure starts with the cabinet parts, VCR Main C.B.A., and Cassette Up Ass'y already removed. Also, all the following procedures for adjustment and parts replacement should be done in EJECT Mode. When reassembling, follow the step(s) in reverse order.

STEP /LOC. No.	START -ING No.	PART	Fig. No.	REMOVE	INSTALLATION (ADJUSTMENT INFORMATION)
①	1	PINCH CAM CAP	T DM1 DM3	(L-1)	-----
②	1	PRESSURE ROLLER ARM UNIT	T DM1 DM3	<Note 1>	(+) -----
③	1	P5 SECTOR GEAR	T DM1 DM4	(C-1), <Note 2>	(+) See Alignment Procedure for Mechanism, Item 12-5.
④	3	PINCH CAM	T DM1 DM3	-----	(+) See Alignment Procedure for Mechanism, Item 12-5.
⑤	4	P5 ARM UNIT	T DM1 DM4	(N-1), (W-1), (P-1)	(+) See Height Adjustment P5 Arm Unit.
⑥	6	A/C HEAD UNIT	T DM1 DM5	(S-1), (S-2), 2(W-2) (W-3), (W-4), P1541	(+) See Horizontal Position Adjustment of A/C Head.
⑦	7	OPENER ANGLE	T DM1 DM6	(S-3), (S-4), (S-5)	-----
⑧	7	CAM FOLLOWER ARM UNIT	T DM1 DM6	(L-2)	(+) <Note 3> See Installation Procedure of CAM FOLLOWER ARM UNIT, Item 12-4.
⑨	9	BRAKE ASS'Y	T DM1 DM7	2(P-2), (P-3), 2(L-3), 2(L-4)	(+) See Setting Condition in Fig. DM7.
⑩	10	TENSION ARM UNIT	T DM1 DM8	(P-4), (L-5)	(+) See Position Adjustment of Tension Post.

↑ A ↑ B ↑ C ↑ D ↑ E ↑ F ↑ G

How to read chart shown above :

- (A) : Order of steps in Procedure
When reassembling, perform the step(s) in the reverse order.
These numbers are also used as the identification (location) No. of parts in Figures.
- (B) : Starting No. followed by corresponding part which can be removed at this stage. See example below.
Example:
The pinch Cam Cap can be removed without removing any other parts because the STEP/LOC. No. and the STARTING No. are the same.
But the Pressure Roller Arm Unit can be removed only after removing the Pinch Cam Cap(No. ①)
- (C) : Part to be removed or installed.
- (D) : Location of part.
T=Top B=Bottom
- (E) : Fig. No. showing Procedure or Part Location.
- (F) : Identification of part to be removed, unhooked, unlocked, released, unplugged, unclamped, or unsoldered.
(P-1) = Spring(P-1); 3(S-1) = 3 Screws(S-1); 3(W-1) = 3 Washers(W-1);
(C-1) = Cut Washer(C-1); (N-1) = Nut(N-1); 2(L-1) = 2 Locking Tabs(L-1)
- (G) : Adjustment information for installation.
(+): Refer to Exploded Views for Lubrication Information.

STEP /LOC. No.	START -ING No.	PART	Fig. No.	REMOVE	INSTALLATION (ADJUSTMENT INFORMATION)
⑪	11	TAKEUP REEL TABLE UNIT	T DM1	*(L-6)	(+) <Note 4> See Height Adjustment of Reel Tables.
⑫	12	SUPPLY REEL TABLE UNIT	T DM1	*(L-7)	
⑬	13	CASSETTE DOWN DETECT PIECE	B DM2	-----	-----
⑭	14	MOTOR BLOCK ASS'Y	B DM2 DM9	Unsolder, 2(S-6)	-----
⑮	15	CLUTCH UNIT	B DM2 DM10	(C-2), <Note 2> Capstan Belt	(+) -----
⑯	16	P.C.B. BRACKET	B DM2	(S-7)	-----
⑰	14	SECONDARY ROD UNIT	B DM2 DM11	*(P-5)	(+) -----
⑱	17	MAIN ROD	B DM2 DM12	(C-3), *2(L-8) <Note 2>	(+) See Alignment Procedure for Mechanism, Item 12-2
⑲	18	LOADING ARM T UNIT	B DM2 DM13	-----	(+) See Alignment Procedure for Mechanism, Item 12-1.
⑳	18	LOADING ARM S UNIT	B DM2 DM13	*(L-9)	
㉑	21	P1 ROLLER	T DM1	(C-4), <Note 2>	-----
㉒	3	CAPSTAN HOLDER UNIT	T DM1	3(S-8)	(+) See Replacement of Capstan Rotor or Stator Unit.
㉓	23	CENTER BLOCK UNIT	T DM1	2(S-9)	-----
㉔	24	CYLINDER BASE	T DM1 DM15	3(S-13)	(+) -----
㉕	24	D.D. CYLINDER UNIT	B DM2 DM15	3(S-11), 2(S-12) Unsolder, Head Amp Ass'y	See, Replacement of D.D. Cylinder Unit.
㉖	14	CAPSTAN ROTOR UNIT	B DM2 DM14	-----	(+) See, Replacement of Capstan Rotor or Stator Unit.
㉗	26	CAPSTAN STATOR UNIT	B DM2 DM14	3(S-14), Unsolder	See, Replacement of Capstan Rotor or Stator Unit.
㉘	24	LOADING POST BASE T UNIT	T DM1	Slide to rear to remove	(+) -----
㉙	24	LOADING POST BASE S UNIT	T DM1	Slide to rear to remove	

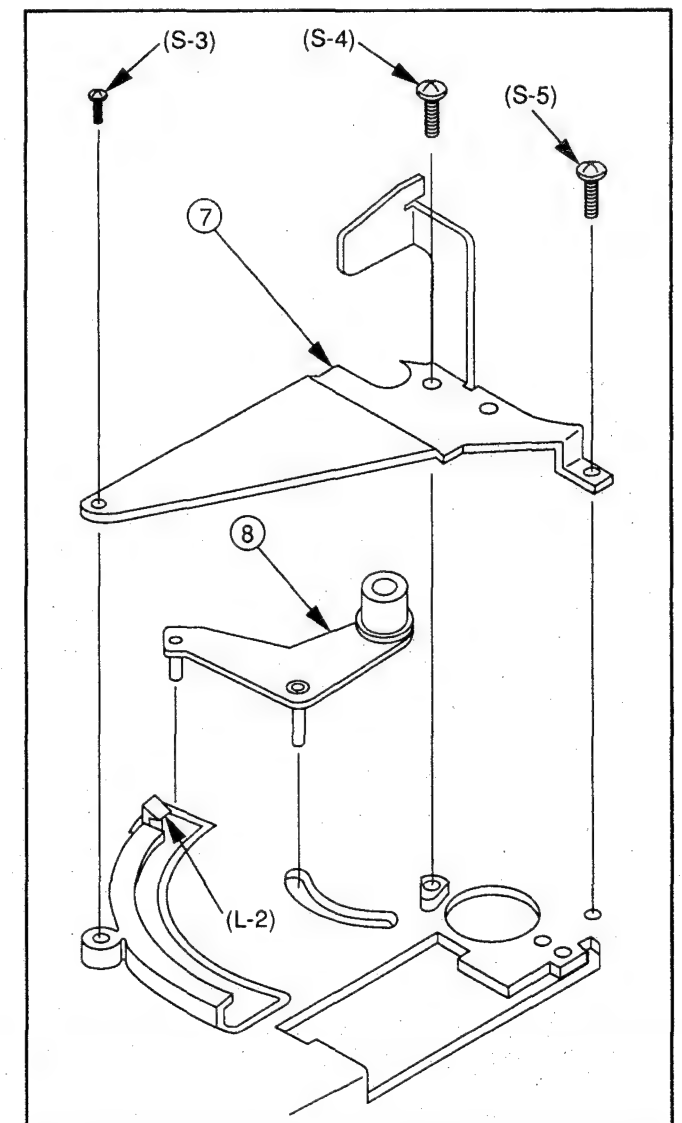
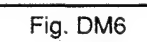
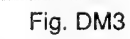
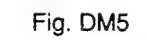
it of



Rotor or

Rotor or

2-19



Main Brake Spring/Soft Brake Springs Hook Positions

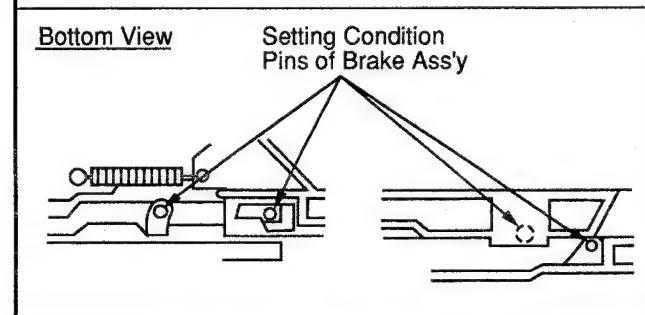
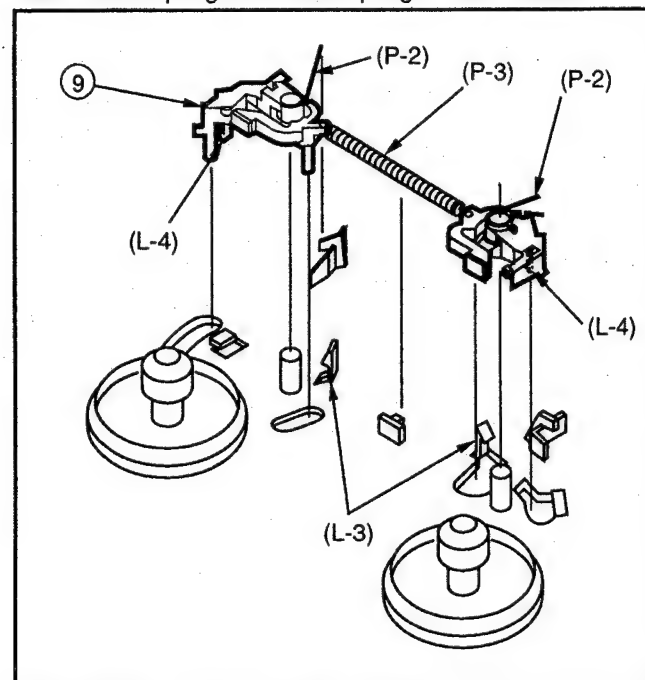


Fig. DM7

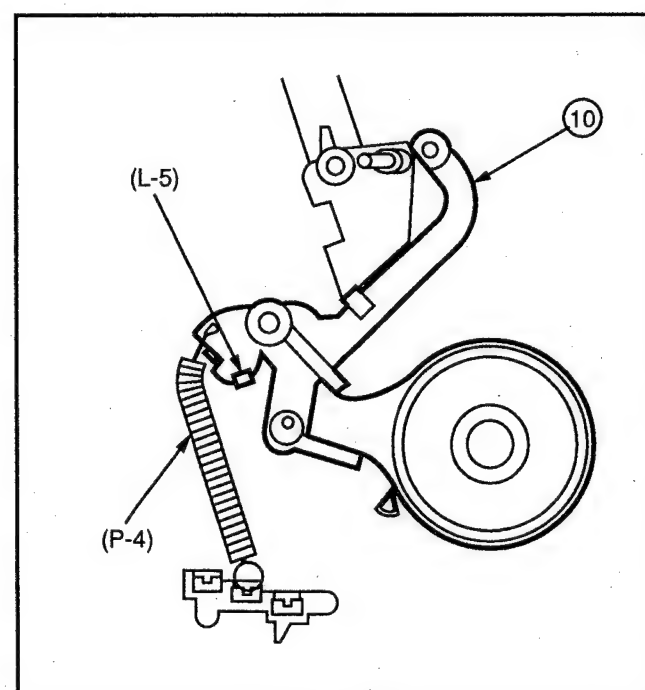


Fig. DM8

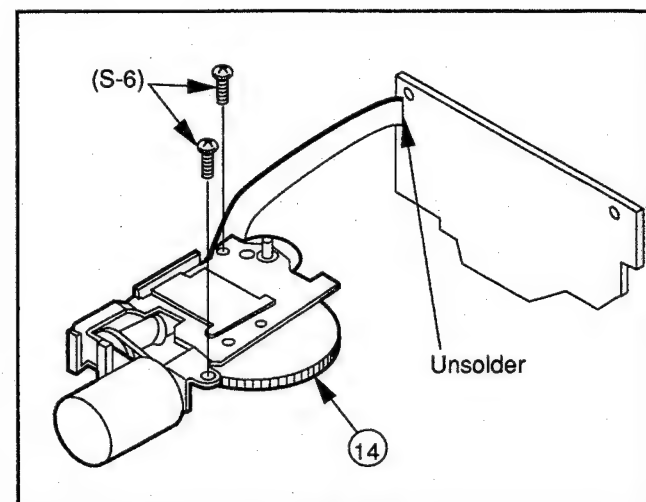


Fig. DM9

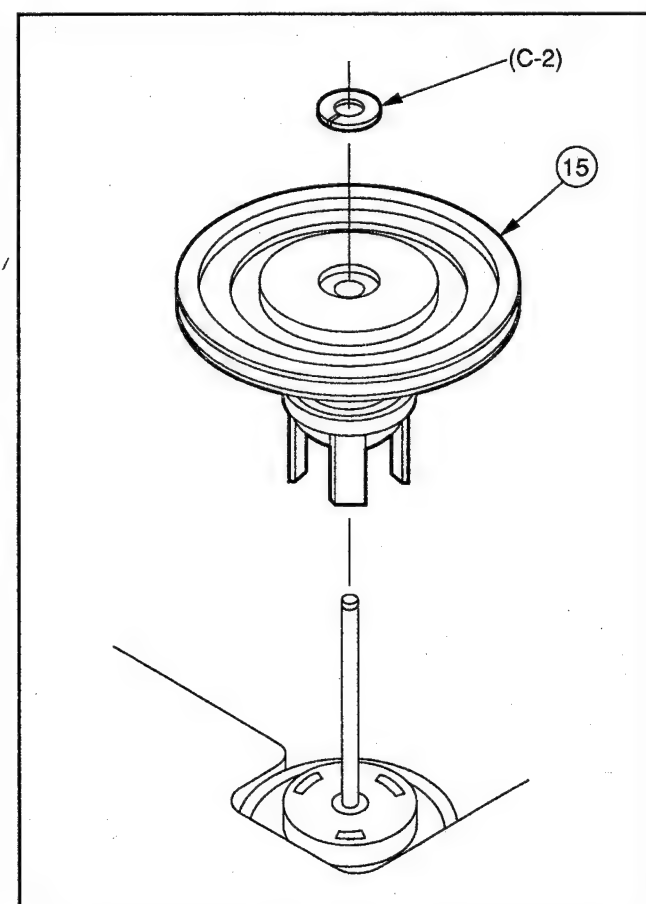


Fig. DM10

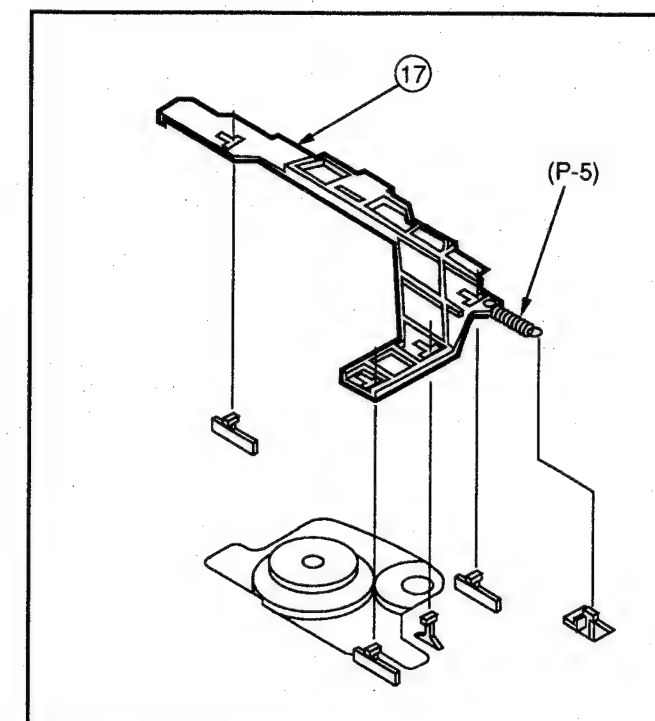


Fig. DM11

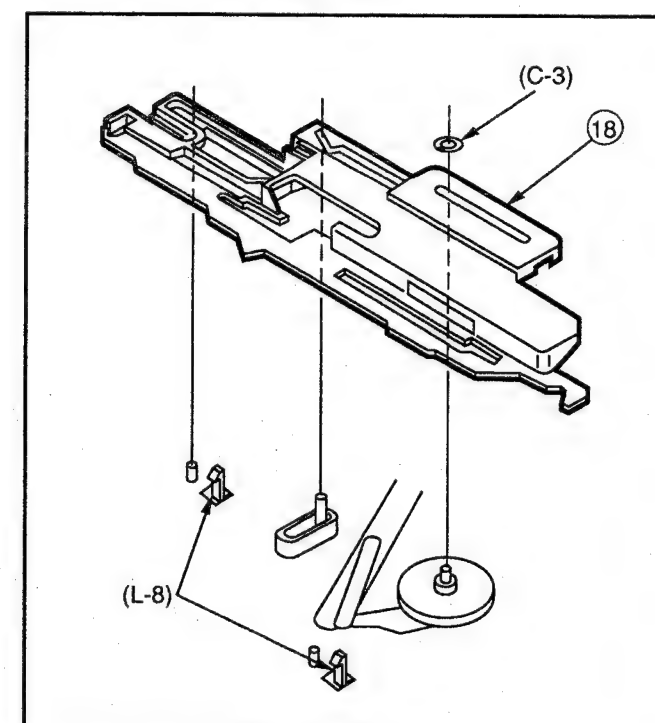


Fig. DM12

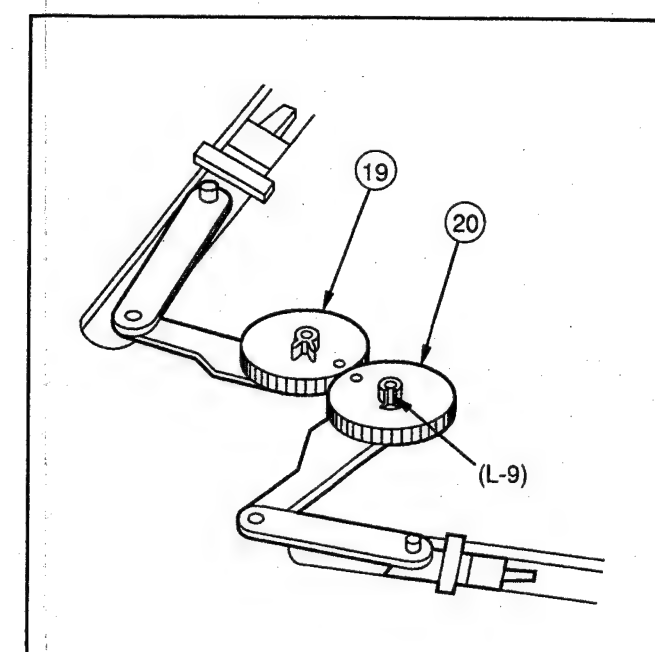


Fig. DM13

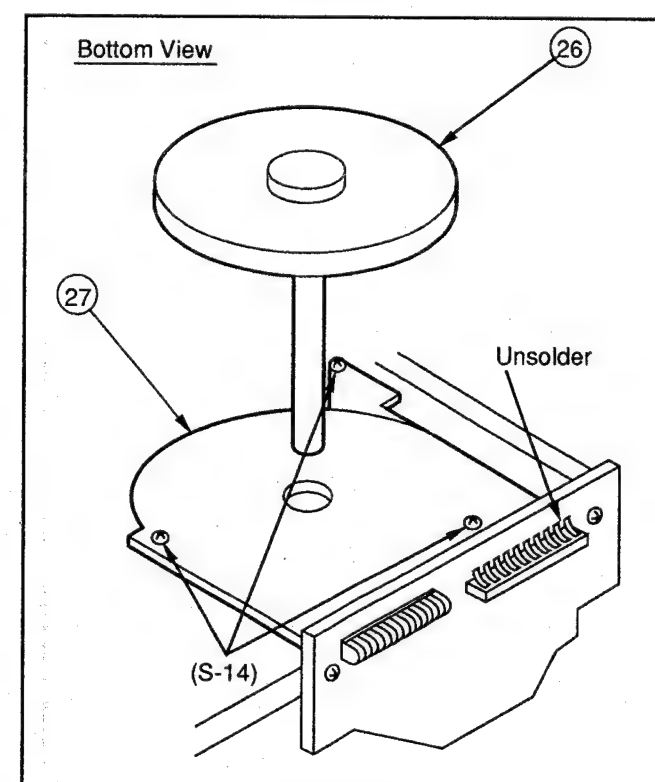


Fig. DM14

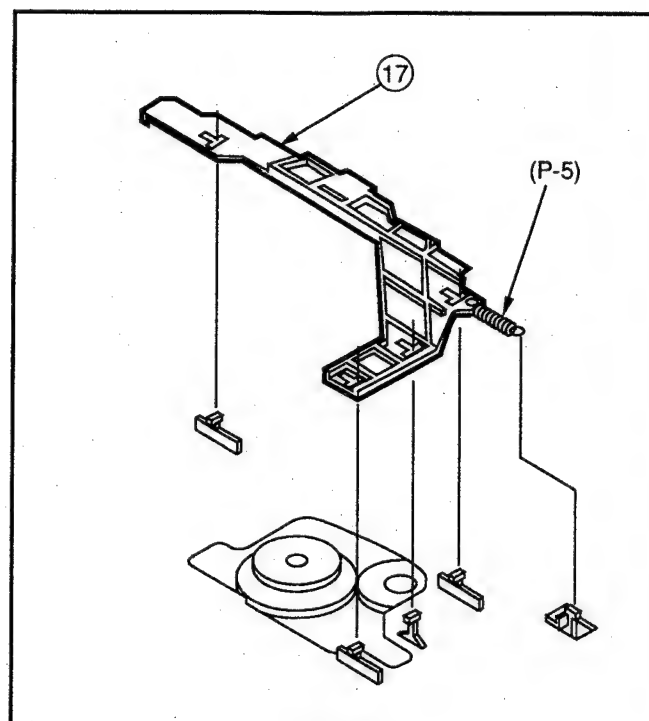
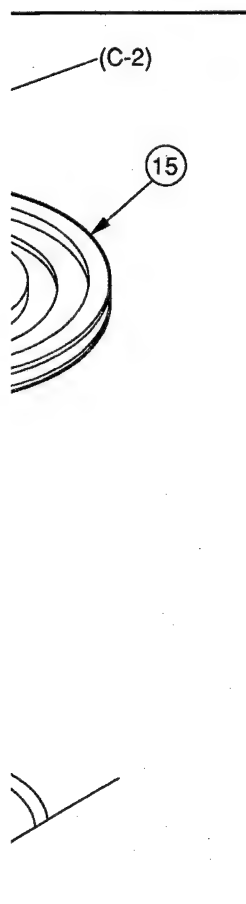
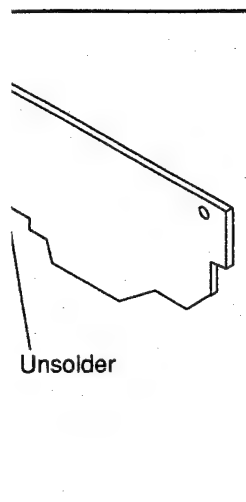


Fig. DM11

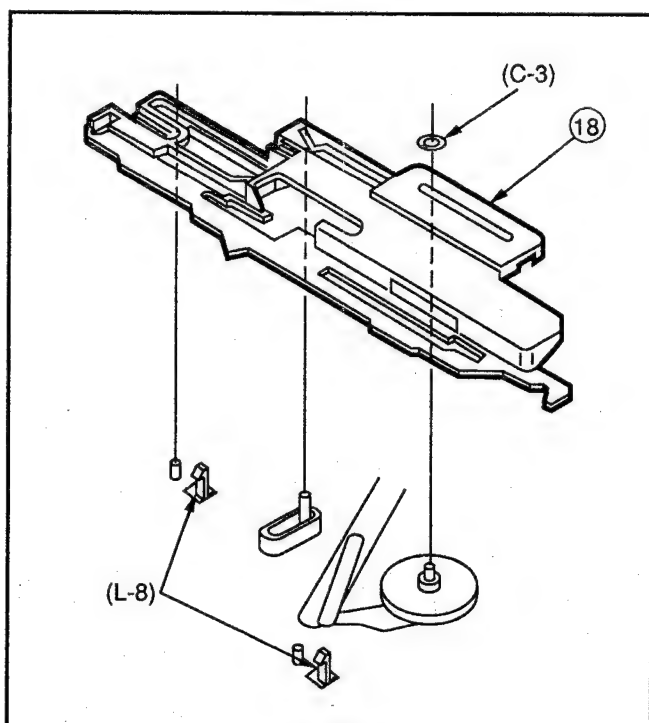


Fig. DM12

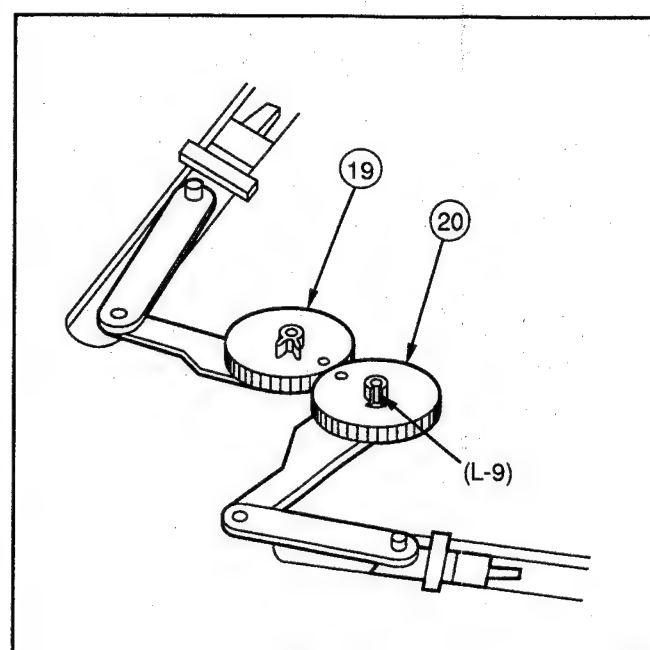


Fig. DM13

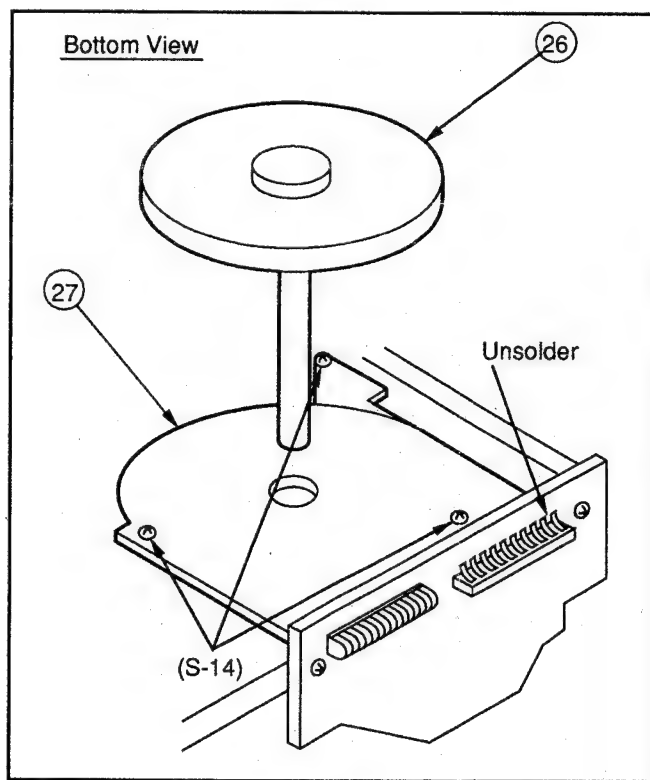


Fig. DM14

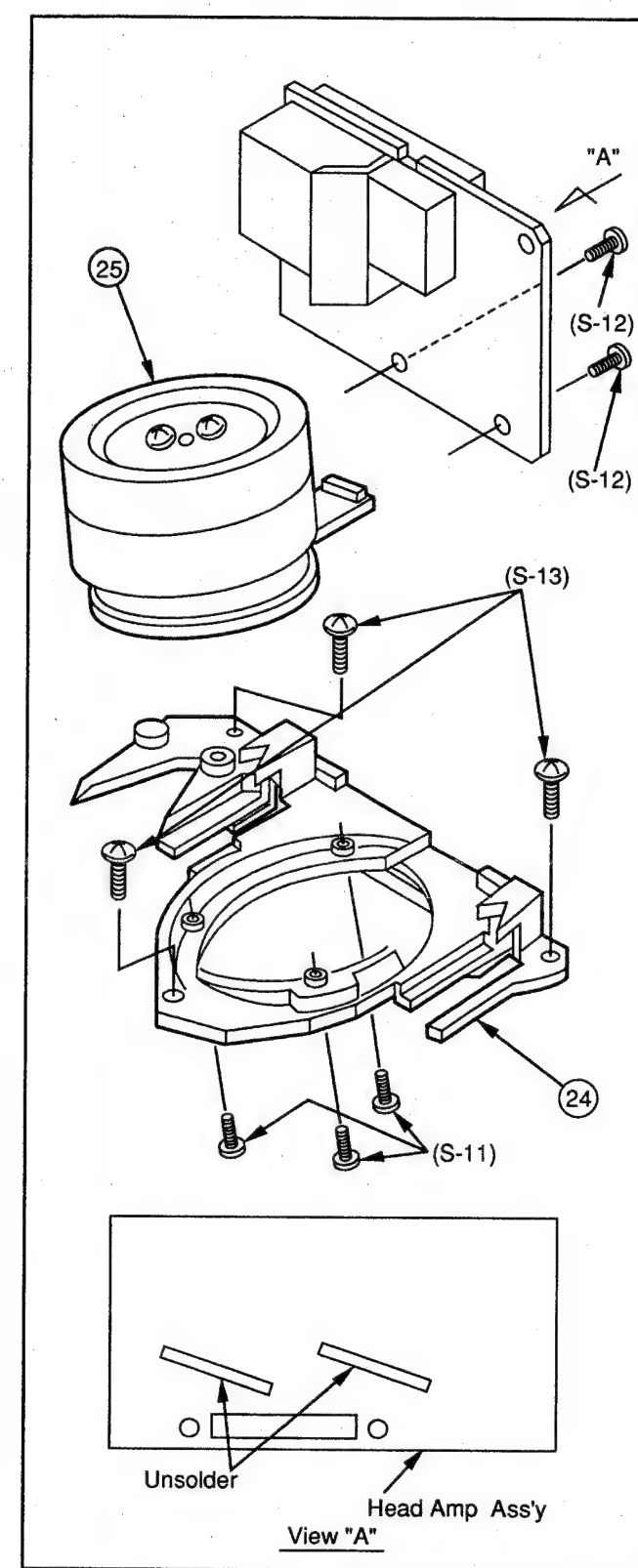


Fig. DM15

Reference <Notes> in Table 11 :

1. Before removing the Pressure Roller Arm Unit, turn the Loading Pulley of the Motor Block Ass'y. Then align the projection of the Pressure Roller Arm Unit and the cut out portion of the Pinch Cam.
2. This cut washer is not reusable. If removed, install a new one.
3. Install the Cam Follower Arm Unit so that the pin on the Cam Follower Arm Unit meets the inner slot of the Motor Block Ass'y.
4. When reinstalling the Supply and Takeup Reel Tables, clean the rotating surface on them with a soft cloth.

12. ALIGNMENT PROCEDURES OF MECHANISM

The mechanism of this model is mostly engaged to the System Control Circuit through the Mode Select Switch. Therefore the connection between the Mode Select Switch and the Cam Gear decides all further movement of the mechanical parts such as levers, gears, rollers, and so on. For specific removal and installation procedures, refer to the Disassembly/Assembly Procedures on Page 2-17.

If these parts are not properly aligned, even if off by only one tooth, the unit will be unloaded or stopped. It may result in damage to the mechanical or electrical parts. This mechanical adjustment is performed in the Eject Mode. The details concerning the mechanical condition will be described later.

Important Note:
All through hole alignments must be made precisely so that the complete procedure will exactly align the gear teeth. If the alignment is off by only one tooth then the mechanism will not operate properly.

POSITION ON LINK GEAR IN EJECT POSITION

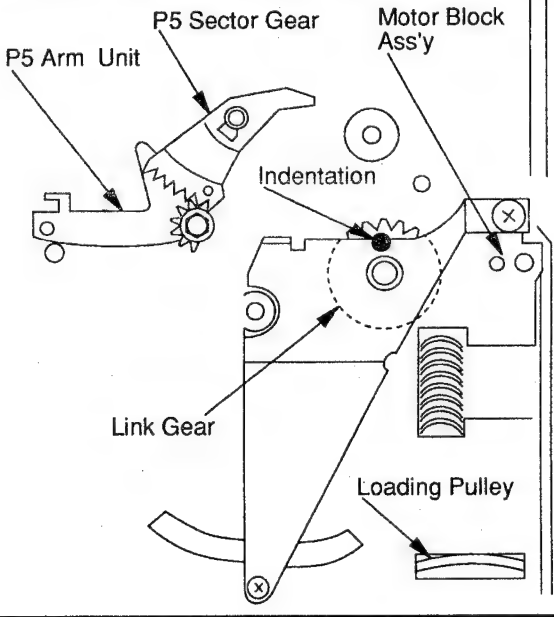


Fig. A1

1. The position of the Indentation on the Link Gear, after removing the Cassette Up Ass'y with the Motor Block Ass'y in the Eject Position, is shown in Fig. A1.

12-1. ALIGNMENT PROCEDURES OF LOADING ARM T UNIT AND LOADING ARM S UNIT

1. Set the P2 and P3 posts to the unloading position. Then install the Loading Arm T Unit and the Loading Arm S Unit so that the hole on the Loading Arm T Unit is exactly in line with the hole on the Loading Arm S Unit.

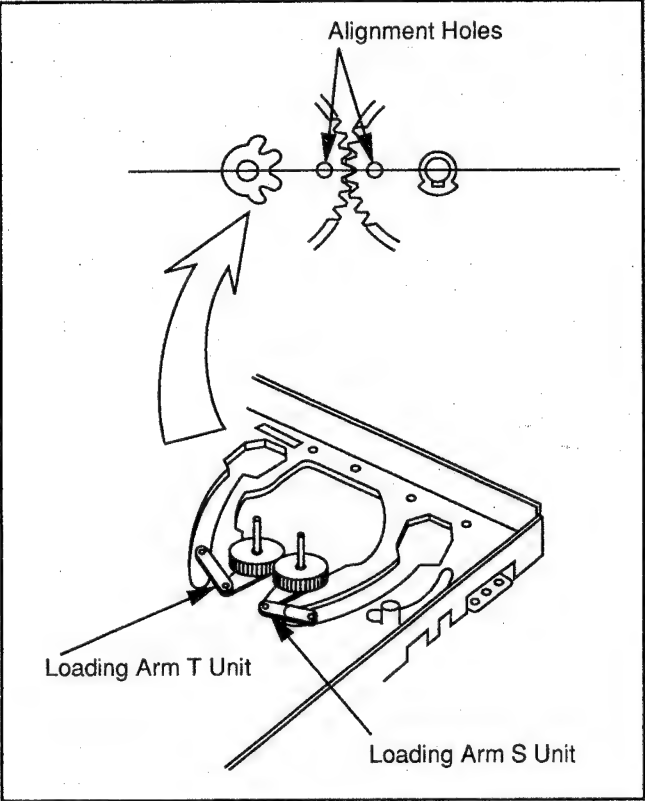


Fig. A2

12-2. ALIGNMENT PROCEDURES FOR MAIN ROD

1. Install the Main Rod so that the line on the Main Rod aligns with the Shaft of the Loading Arm T Unit. Make sure the Shafts of the Brake Ass'y, and the Shaft of the Cam Follower Arm Unit are positioned as shown in Fig. A3.

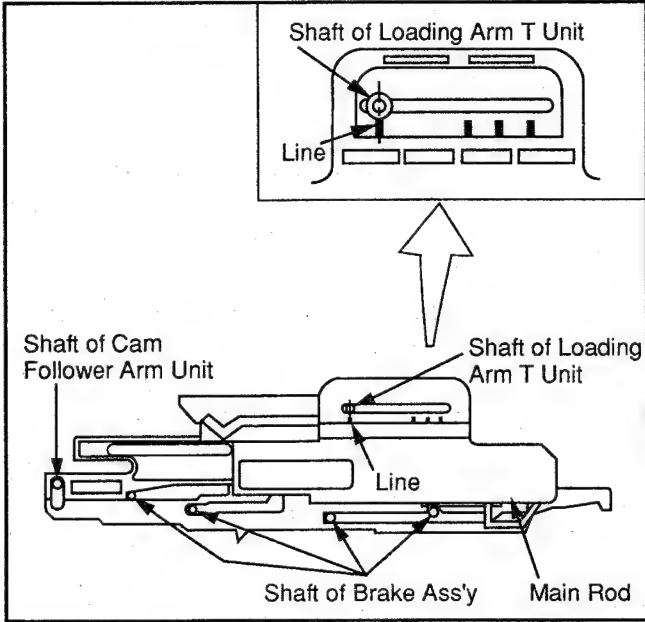


Fig. A3

12-3. ALIGNMENT PROCEDURES OF LINK GEAR, CAM GEAR, AND MODE SELECT SWITCH

1. Install the Cam Gear so that the Indentation on the Cam Gear aligns with the Hole on the Link Gear.

2. Install the Mode Select Switch so that the Hole on the Mode Select Switch aligns with the Indentation on the Cam Gear. Refer to Fig. A4.

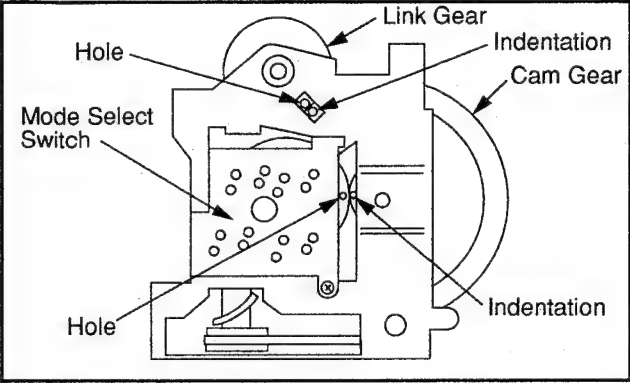


Fig. A4

12-4. INSTALLATION PROCEDURES OF CAM FOLLOWER ARM UNIT

1. Confirm that the Cassette Up Ass'y is in the Eject Position.

2. Then install the Cam Follower Arm Unit, as shown in Fig. A5.

3. Confirm that Shaft A is installed into the slot of the Main Rod.

4. Confirm that Shaft B is installed into the groove on the gear of the Motor Block Ass'y at the point indicated by the arrow in Fig. A5.

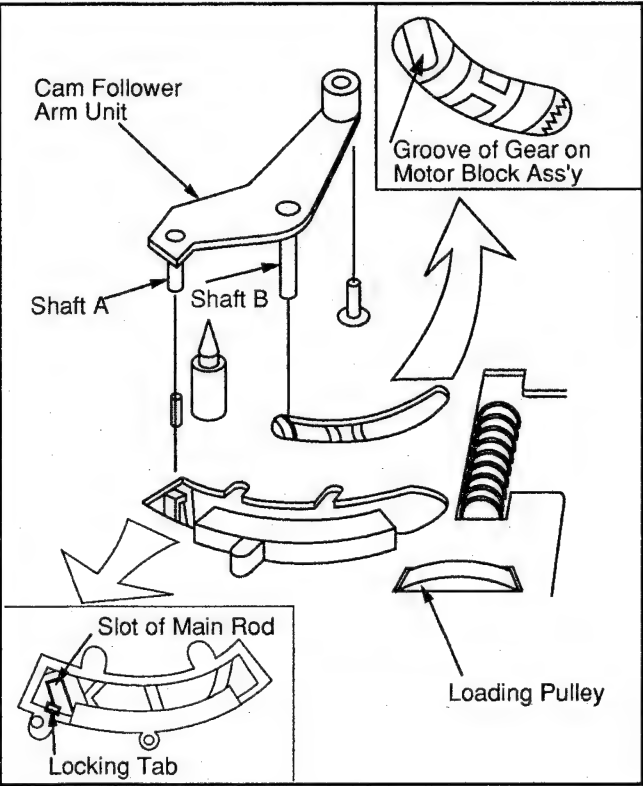


Fig. A5

12-5. ALIGNMENT PROCEDURES OF P5 ARM UNIT AND P5 SECTOR GEAR, PINCH CAM, AND LINK GEAR

1. When installing the Pinch Cam, confirm that the Link Gear of the Motor Block Ass'y is in the Eject Position.

2. Install the P5 Sector Gear and Pinch Cam simultaneously. The last tooth on the P5 Arm Unit must align with the hole on the P5 Sector Gear and the hole on the Pinch Cam must align with the Indentation on the Link Gear.

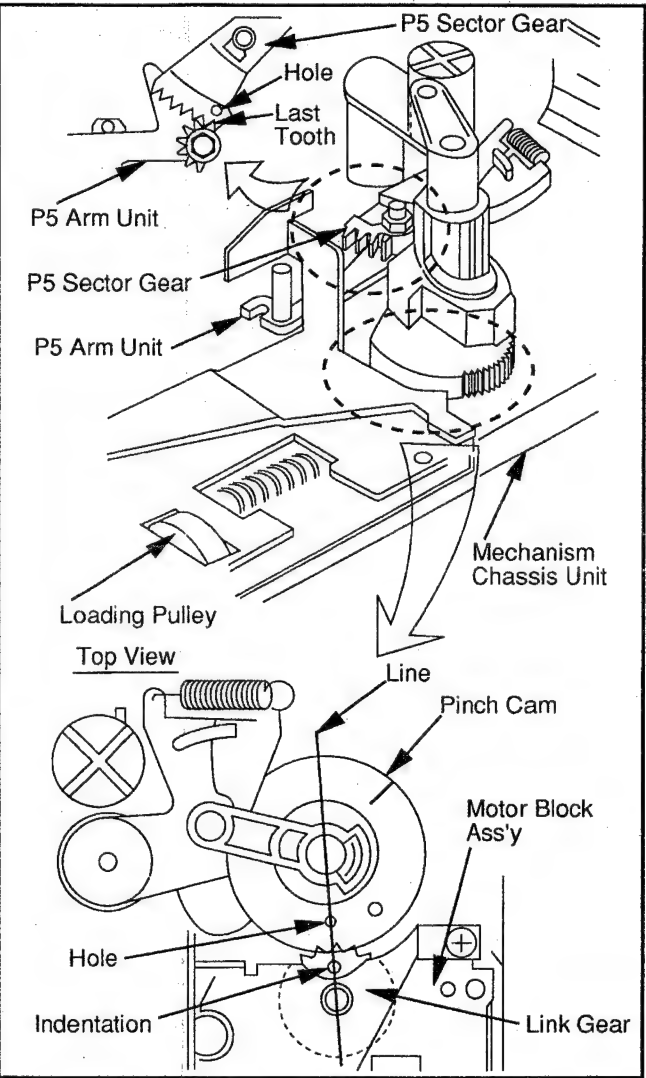
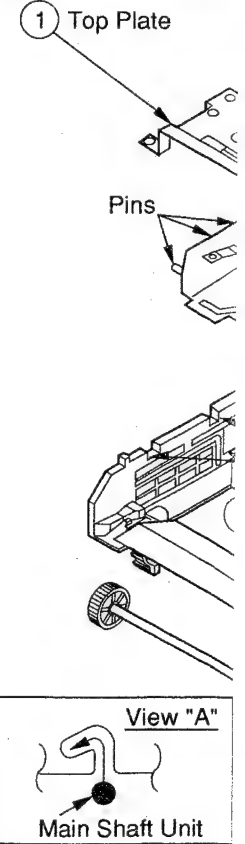


Fig. A6

13. DISASSEMBLY AND ADJUSTMENT

STEP LOC. No.	START-ING No.	TO
①	1	TO
②	2	SU
③	3	WI
④	2	MA
⑤	2	CA
⑥	2	HO
⑦	2	CA
⑧	2	SE
⑨	2	WI
⑩	8	GE
⑪	2	CA
⑫	2	SE
⑬	2	WC

(Top)



Unit

OR

Rod aligns

Shaft of the in Fig. A3.

Unit

of Loading Unit

Main Rod

12-3. ALIGNMENT PROCEDURES OF LINK GEAR, CAM GEAR, AND MODE SELECT SWITCH

1. Install the Cam Gear so that the Indentation on the Cam Gear aligns with the Hole on the Link Gear.
2. Install the Mode Select Switch so that the Hole on the Mode Select Switch aligns with the Indentation on the Cam Gear. Refer to Fig. A4.

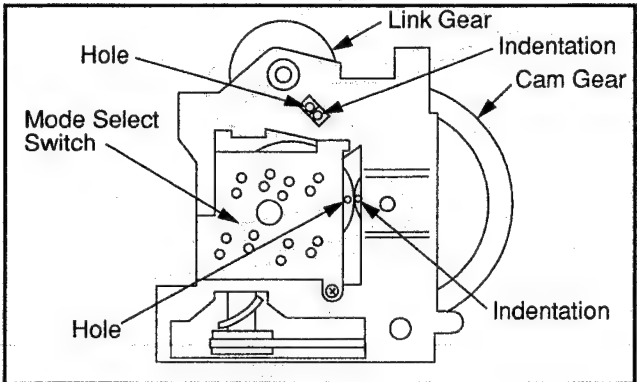


Fig. A4

12-4. INSTALLATION PROCEDURES OF CAM FOLLOWER ARM UNIT

1. Confirm that the Cassette Up Ass'y is in the Eject Position.
2. Then install the Cam Follower Arm Unit, as shown in Fig. A5.
3. Confirm that Shaft A is installed into the slot of the Main Rod.
4. Confirm that Shaft B is installed into the groove on the gear of the Motor Block Ass'y at the point indicated by the arrow in Fig. A5.

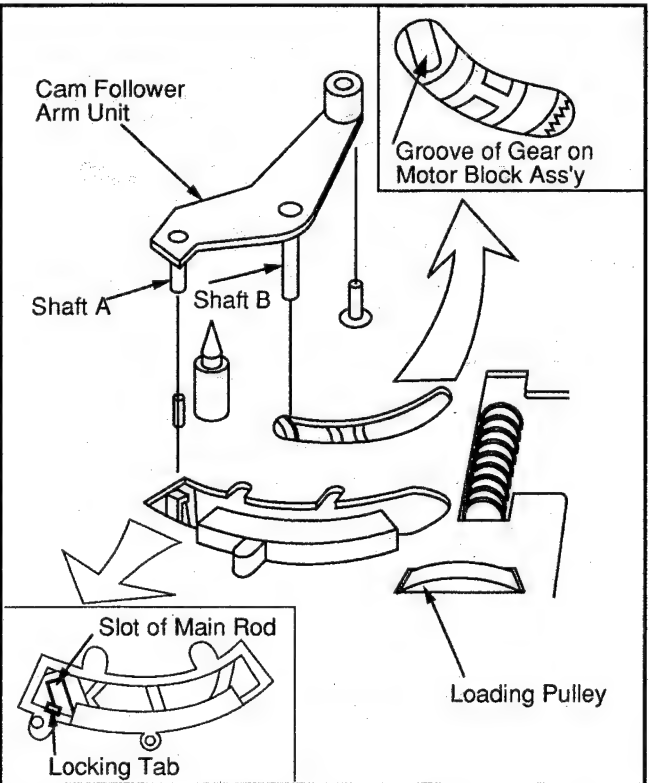


Fig. A5

12-5. ALIGNMENT PROCEDURES OF P5 ARM UNIT AND P5 SECTOR GEAR, PINCH CAM, AND LINK GEAR

1. When installing the Pinch Cam, confirm that the Link Gear of the Motor Block Ass'y is in the Eject Position.
2. Install the P5 Sector Gear and Pinch Cam simultaneously. The last tooth on the P5 Arm Unit must align with the hole on the P5 Sector Gear and the hole on the Pinch Cam must align with the Indentation on the Link Gear.

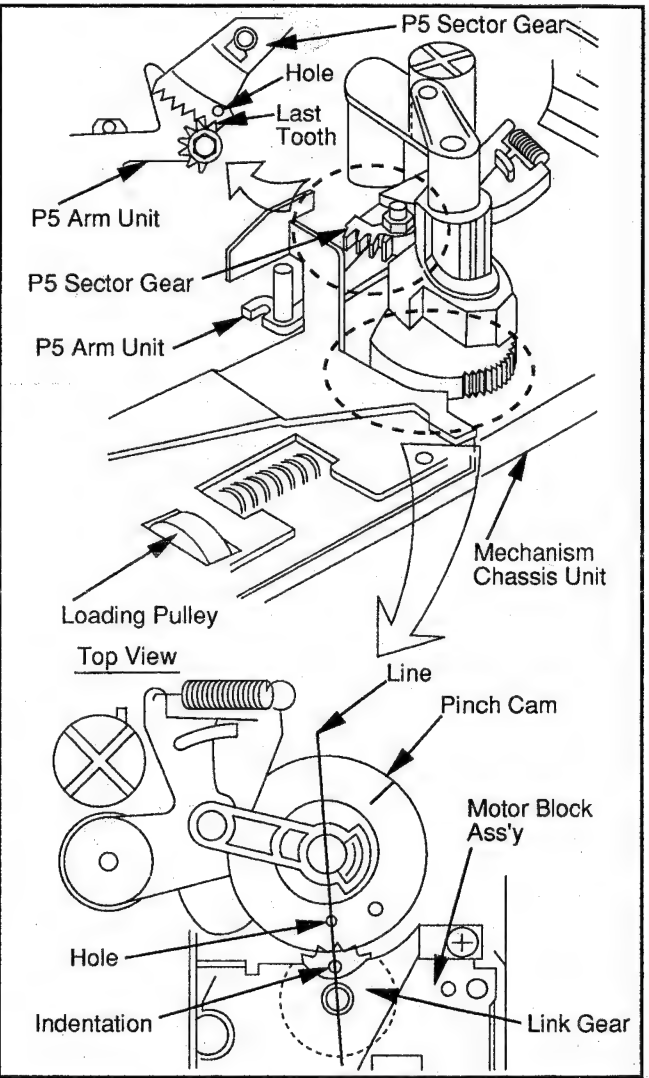


Fig. A6

13. DISASSEMBLY / ASSEMBLY AND ADJUSTMENT OF CASSETTE UP ASS'Y

When reassembling, follow the steps in reverse order.

STEP LOC. No.	START-ING No.	PART	Fig. No.	REMOVE	INSTALLATION (ADJUSTMENT INFORMATION)
①	1	TOP PLATE	DA1	(S-1), Grounding Plate, 4(L-1)	.....
②	2	SUB PLATE UNIT	DA2	4(L-2) (+)	.....
③	3	WIPER ARM -L	DA3	(L-6), Wiper Spring -L	(+) <Note 1>
④	2	MAIN SHAFT UNIT	DA1	.....	<Note 2>
⑤	2	CASSETTE GUIDE	DA1	.....	.....
⑥	2	HOLDER GUIDE -L	DA4	2(L-8) (+) .....	.....
⑦	2	CASSETTE HOLDER GUIDE R UNIT	DA4	2(L-9) (+) .....	.....
⑧	2	SET LEVER -L	DA4	2(L-10), Set Lever Spring	<Note 3>
⑨	2	WIPER ARM R UNIT	DA2	(L-3)	(+) Align the hole.<Note 4>
⑩	8	GENEVA GEAR UNIT	DA2	(L-7)	(+) Align the hole.<Note 4>
⑪	2	CASSETTE LEVER	DA2	(L-11) .....	.....
⑫	2	SENSOR COVER	DA2	(L-4)	.....
⑬	2	WORM WHEEL	DA2	(L-5)	(+) Hole at bottom.

(Top)

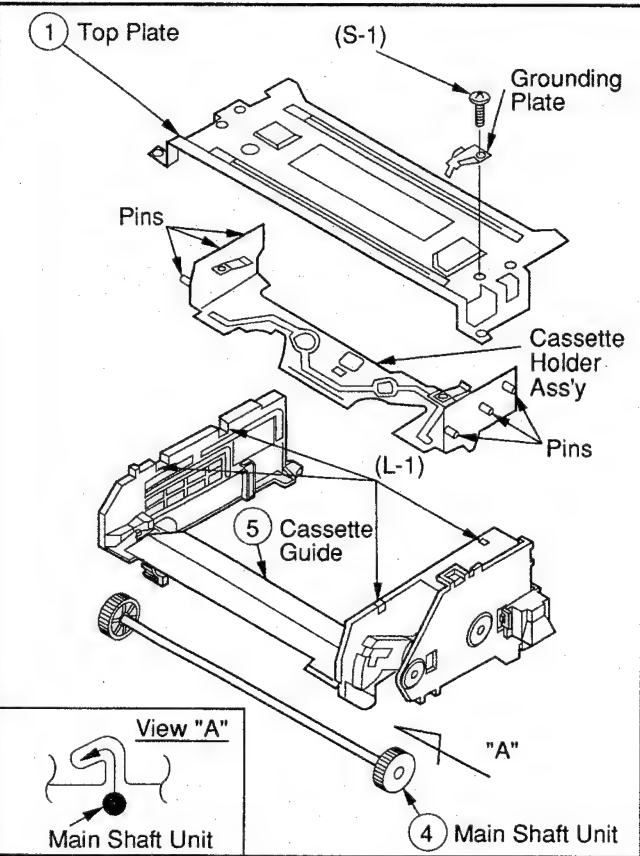


Fig. DA1

List of Abbreviations :

(S-1) = Screw(S-1); 4(L-1)= 4 Locking Clips(L-1)

Reference <Notes> in Table 13 :

1. When installing Wiper Arm -L onto Side Plate -L, put the slot of Wiper Arm -L into the pin of the Cassette Holder Ass'y in the Eject Position.
2. When installing the Main Shaft Unit, as shown in Fig. DA1, install the Main Shaft Unit in the direction shown by the arrow in view "A".
3. When installing Set Lever -L, as shown in Fig. DA4, fit the holes on the Set Lever over the hook of Holder Guide -L. Then hook the Set Lever Spring onto ④ and ⑤.
4. When installing Sub Plate -R onto Side Plate (R), put the slot of Wiper Arm -R over the pin of the Cassette Holder Ass'y in the Eject Position.

(Right Side)

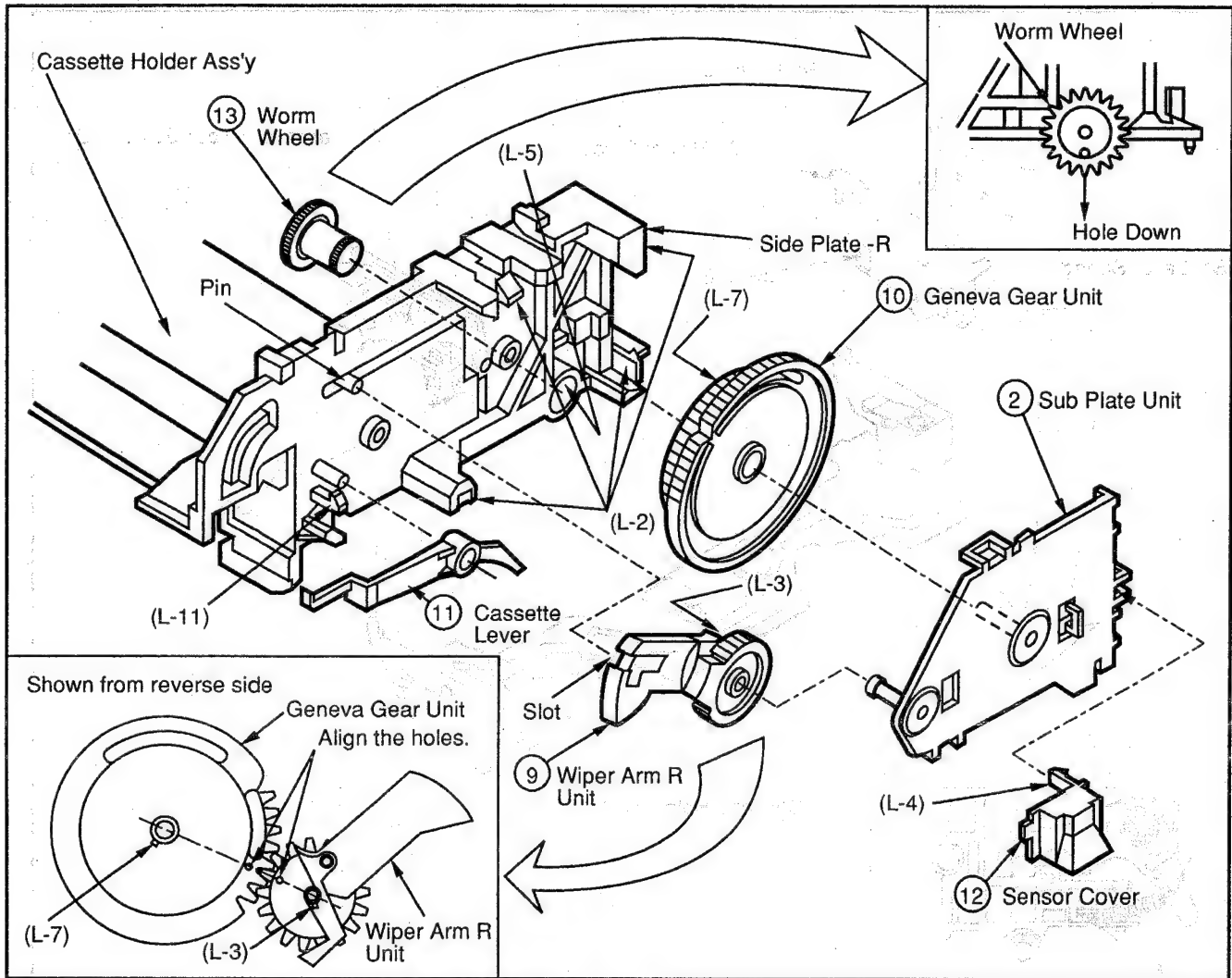


Fig. DA2

(Left Side)

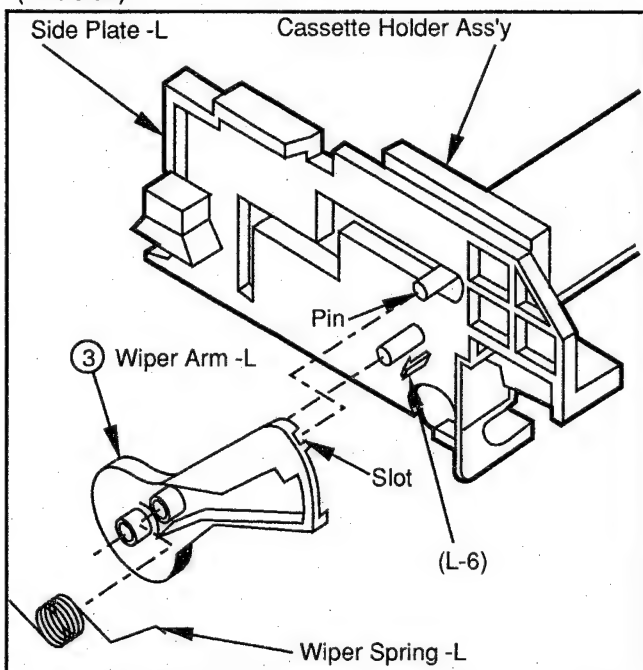


Fig. DA3

(Cassette Holder Ass'y)

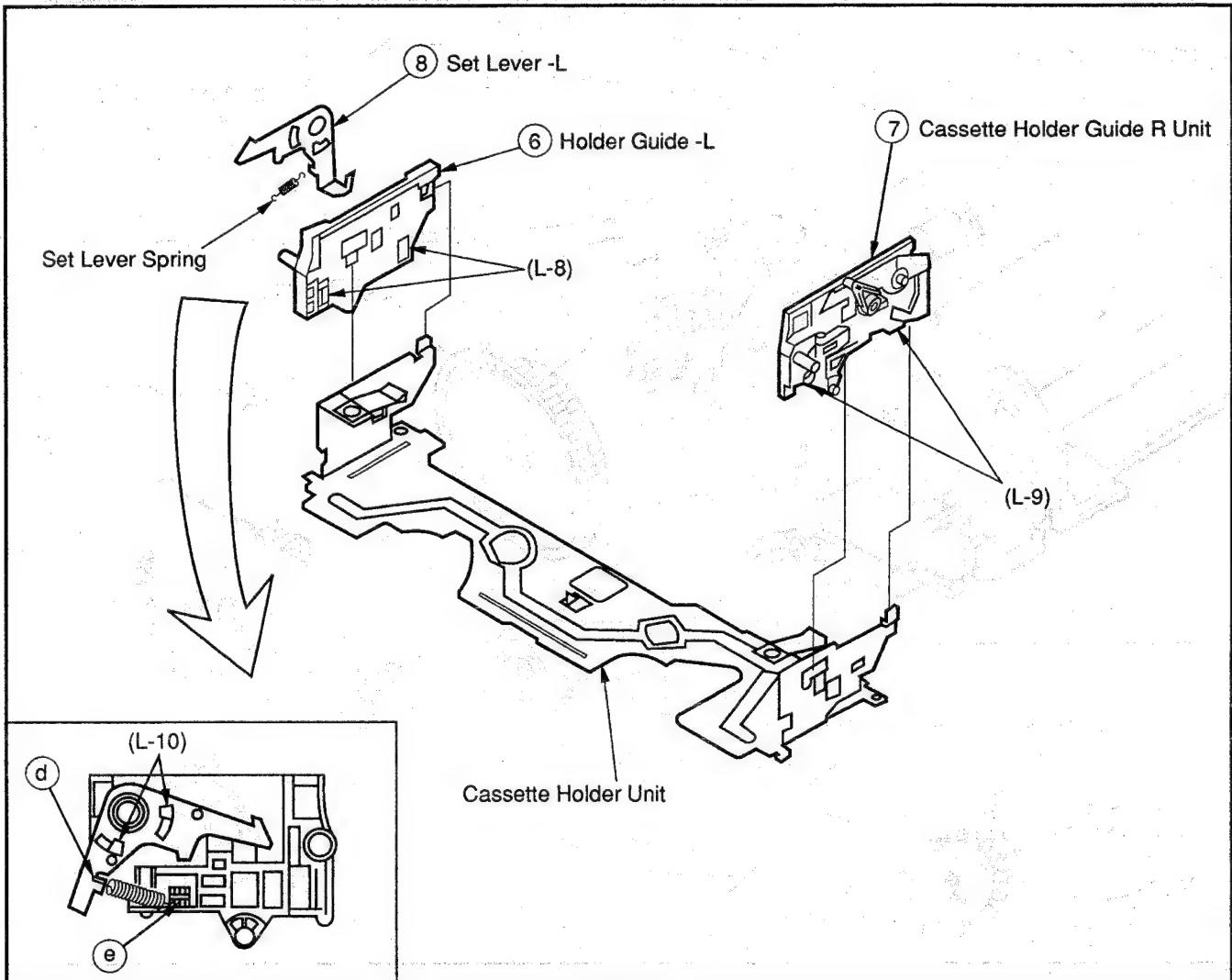


Fig. DA4

14. ADJUSTMENT OF CASSETTE UP ASS'Y AND CHASSIS

When reinstalling the Cassette Up Ass'y, the mechanical adjustment (alignment) described below should be done to ensure proper operation. Then, before reinstalling the Cassette Up Ass'y, be sure that the hole on the Wiper Arm R Unit is aligned with the hole on the Geneva Gear Unit (page 2-27, Fig.DA2). The Cassette Holder Ass'y must be in the Eject Position.

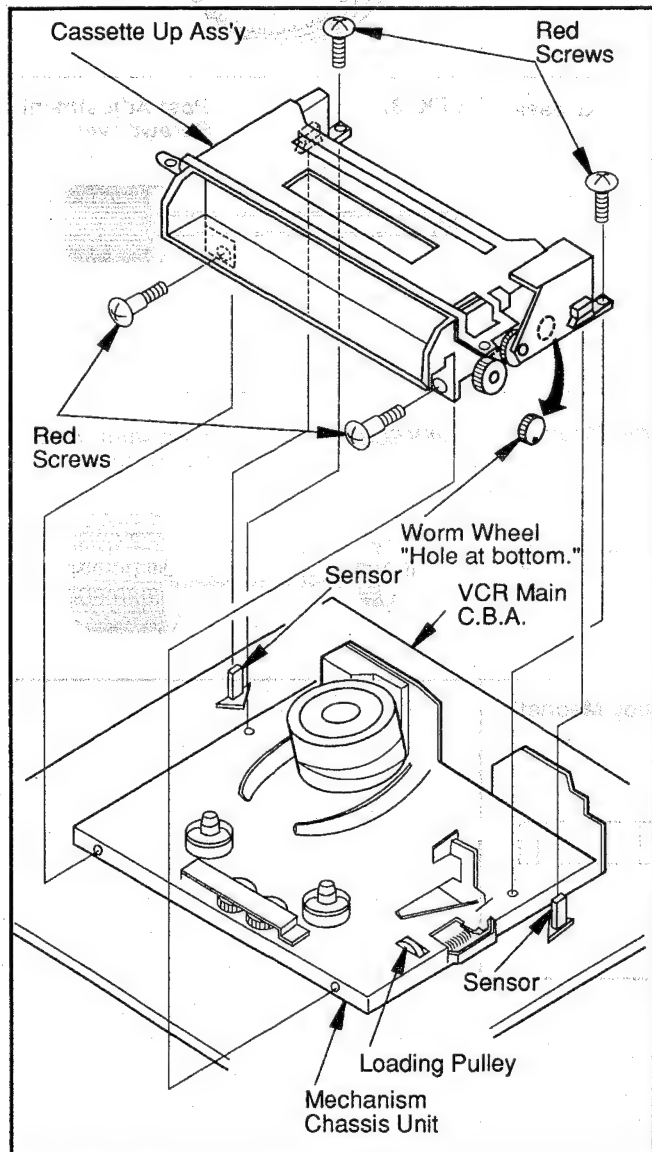
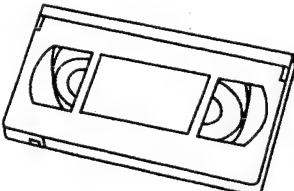
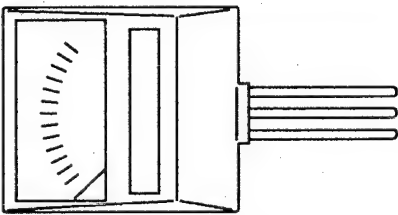
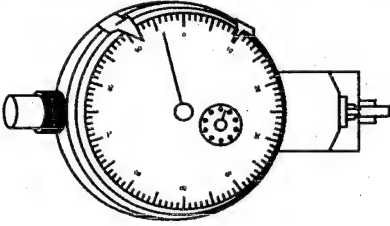
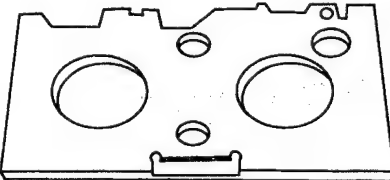

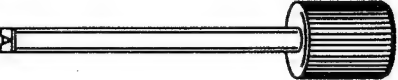


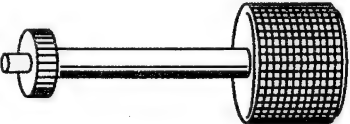
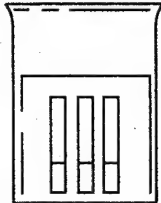



Fig. DA5

1. Turn the Loading Pulley of the Motor Block Ass'y clockwise. Then be sure that the Mechanism is placed fully into the Eject position and maintain this position.
2. Slowly install the Cassette Up Ass'y onto the chassis so that the worm wheel fits into the gear on the Motor Block Ass'y.
3. Then confirm that the Sensors fits properly into the Sensor Covers.
4. Confirm that the hole in the Worm Wheel is in the correct position. (See Fig. DA5)
5. Reinstall the 4 Red Screws as shown in Fig. DA5.
6. Check the operation of the Cassette Loading Mechanism manually and then confirm proper operation with the power turned on.

B. SERVICE FIXTURES AND TOOLS

VFMS0001H6 VHS Alignment Tape 	Back Tension Meter (Made in USA., Purchase Locally) 	VFKS0009 Reel Table Height Fixture 
VFKS0010 Post Adjustment Plate 	VFKS0081 Grease 	VFK0329 Post Adjustment Screwdriver 
MOR265 Molytone Grease 	VFKS0032 Lock Screw Wrench 	VFKS0080 H-Position Adj. Screwdriver 
VFK27 Head Cleaning Stick 	TSM10032-2 Permalloy Magnetic Strip 	

C. ELECTRICAL ADJUSTMENT PROCEDURES

1. TEST EQUIPMENT

To do all of these electrical adjustments, the following equipment is required.

1. Dual-Trace Oscilloscope
Voltage Range : 0.001~50V/Div.
Frequency Range : DC~50MHz
Probes : 10:1, 1:1
2. Signal Generator
Sinewave : 0~10MHz
3. Frequency Counter
Frequency Range : 0~150MHz
4. NTSC Video Pattern Generator
5. DVM(Digital Volt Meter)
Voltage Range : 0.01~50V
6. Plastic Tip Driver and Non-Metal Driver
7. Lock Screw Wrench (VFKS0032)
8. Isolation Transformer (Variable)
9. VHS Alignment Tape (VFMS0001H6)
10. White Pattern Generator
11. White Balance Meter

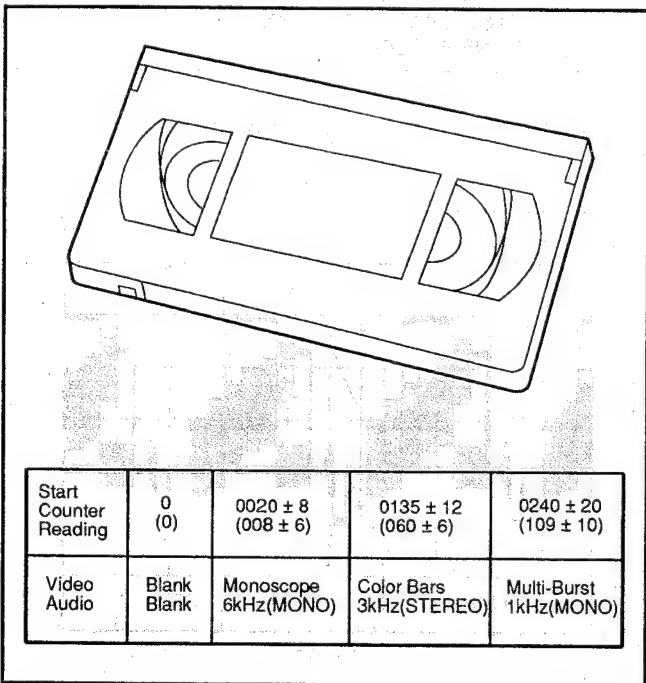


Fig. E1

2. HOW TO READ THE ADJUSTMENT PROCEDURES

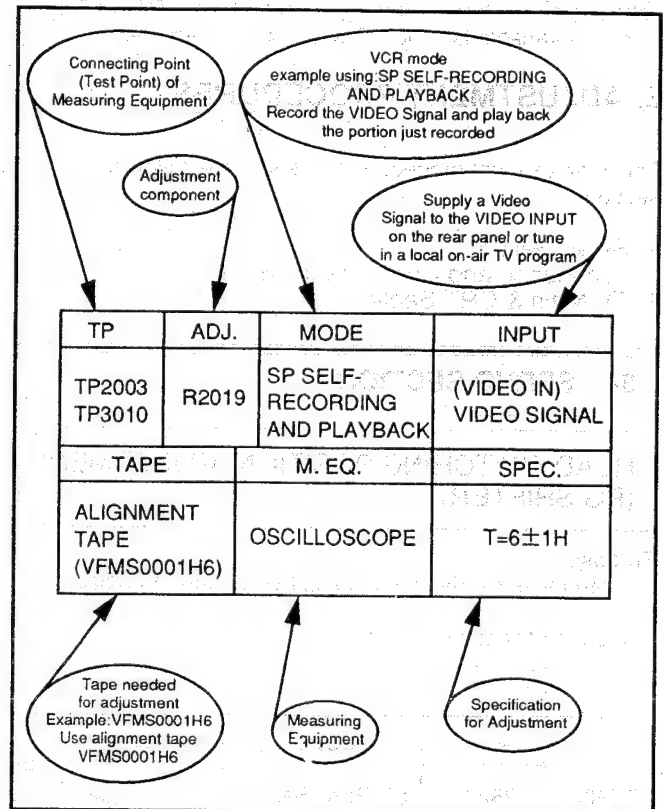


Fig. E2

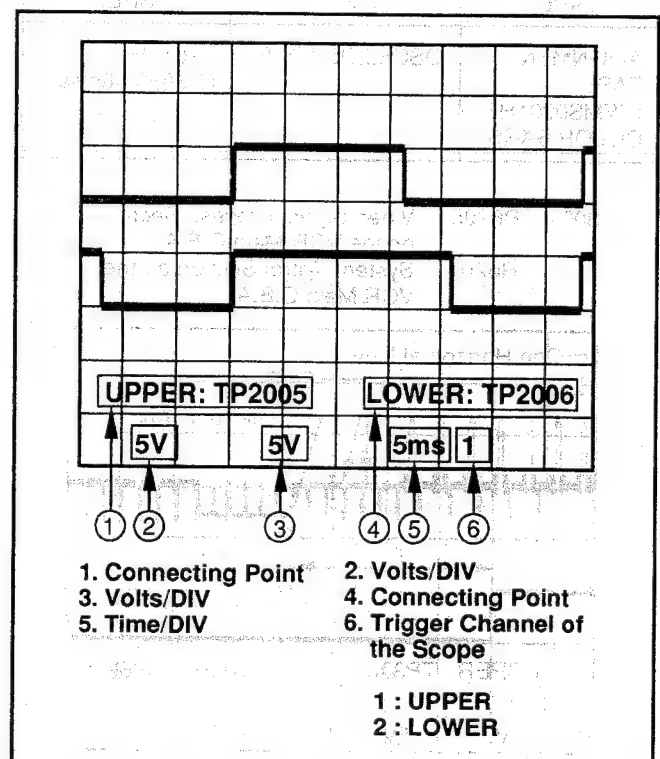


Fig. E3

Caution: Use an Isolation Transformer (Variable)

Because a Hot Chassis Ground is present in the Switched Mode Power Supply Circuit, an Isolation Transformer must be used. Also, in order to have the ability to increase the input voltage slowly, when troubleshooting this type of Power Supply Circuit, a variable Isolation Transformer is required.

3. ADJUSTMENT PROCEDURES

These adjustment procedures consist of the following sections.

1. Servo Section
2. Luminance and Chrominance Section
3. TV Main & CRT Section

3-1. SERVO SECTION

HEAD SWITCHING POSITION ADJUSTMENT (PG SHIFTER)

Purpose:
Determine the Head Switching Point during Playback.

Symptom of Misadjustment:
May cause Head Switching Noise and/or Vertical Jitter in the picture.

TP	ADJ.	MODE	INPUT
TP3001 TP6205	R6201	SP PLAYBACK	
TAPE	M.EQ.	SPEC.	
ALIGNMENT TAPE (VFMS0001H6) COLOR BARS	OSCILLOSCOPE	$T=6\pm 1H$ ($0.38\pm 0.06msec$)	

Note:
TP3001, TP6205 : Video Signal Process Section on the VCR Main C.B.A.
R6201 : System Control Section on the VCR Main C.B.A.

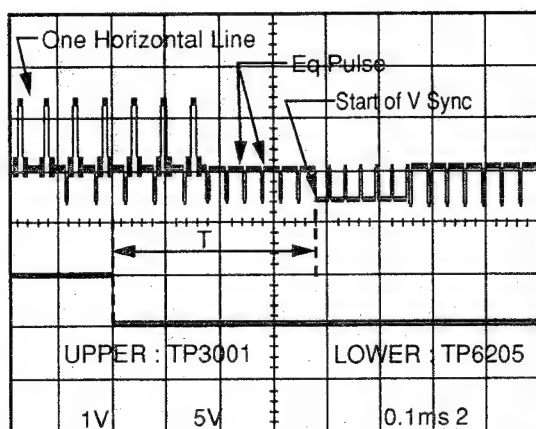


Fig. E4

3-2. LUMINANCE AND CHROMINANCE SECTION

3-2-1. E-E LEVEL ADJUSTMENT

Purpose:
Set the optimum E-E Level of the Luminance Component.

Symptom of Misadjustment:
The picture is sometimes too dark or too bright.

TP	ADJ.	MODE	INPUT
TP3001	R3014	STOP	(VIDEO IN) NTSC COLOR BAR (W/WHITE WINDOW)
TAPE	M.EQ.	SPEC.	
	OSCILLOSCOPE NTSC VIDEO PATTERN GENERATOR	$A=2.0\pm 0.1Vp-p$	

Note:
TP3001, R3014 : Video Signal Process Section on the VCR Main C.B.A.

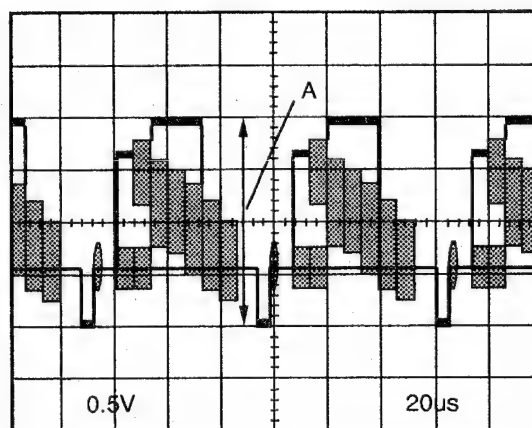


Fig. E5

3-2-2. SYNC TIP FREQUENCY AND DEVIATION ADJUSTMENT

Purpose:

To maintain the recording interchangeability by adjusting the Sync Tip Frequency and Deviation.

Symptom of Misadjustment:

Record interchangeability is inadequate.

Method 1

(SET UP)

1. Connect a signal generator (sinewave) to TP3002 on the Video Signal Process Section of the VCR Main C.B.A. through a resistor (1K Ω).

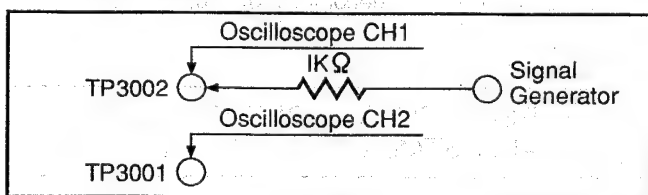


Fig. E6-1

2. Also, connect the oscilloscope CH1 to TP3002.
3. Connect the oscilloscope CH2 to TP3001 on the Video Signal Process Section of the VCR Main C.B.A.
4. Make sure that R3003(REC VIDEO LEVEL) and R3015(REC CHROMA) on the Video Signal Process Section of the VCR Main C.B.A. are not turned fully counterclockwise.

A-1-1. Sync Tip Frequency adjustment

TP	ADJ.	MODE	INPUT
TP3002	R3010	SP REC	(VIDEO IN) NTSC COLOR BAR (W/WHITE WINDOW)
TAPE	M.EQ.		SPEC.
BLANK TAPE	OSCILLOSCOPE NTSC VIDEO PATTERN GENERATOR SIGNAL GENERATOR		Beat is at minimum.

Note:

TP3002, R3010 : Video Signal Process Section on the VCR Main C.B.A.

1. After set up (1~4) is complete, set the frequency and the output level of the signal generator with the AC Plug **NOT** plugged in as follows;

Frequency : 3.5MHz

Output level : 400mVp-p

(at TP3002...Set oscilloscope (CH1) level with the AC Plug **NOT** plugged in.)

2. Adjust R3010(SYNC TIP FREQ) so that the beat is at minimum as shown in Fig. E6-2.

Note :

First, turn R3010 fully clockwise, then adjust R3010.

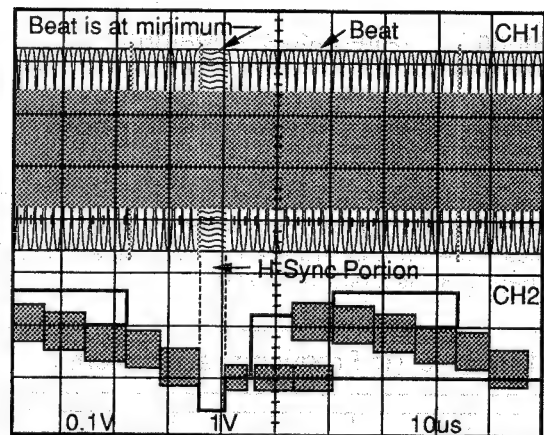


Fig. E6-2

A-2-1. Deviation adjustment

TP	ADJ.	MODE	INPUT
TP3002	R3011	SP REC	(VIDEO IN) NTSC COLOR BAR (W/WHITE WINDOW)
TAPE	M.EQ.		SPEC.
BLANK TAPE	OSCILLOSCOPE NTSC VIDEO PATTERN GENERATOR SIGNAL GENERATOR		Beat is at minimum.

Note:

TP3002, R3011 : Video Signal Process Section on the VCR Main C.B.A.

1. Set the frequency and the output level of the signal generator with the AC Plug **NOT** plugged in as follows;

Frequency : 4.5MHz

Output level : 400mVp-p

(at TP3002...Set oscilloscope (CH1) level with the AC Plug **NOT** plugged in.)

2. Adjust R3011(DEVIATION) so that the beat is at minimum as shown in Fig. E6-3.

Note :

First, turn R3011 fully clockwise, then adjust R3011.

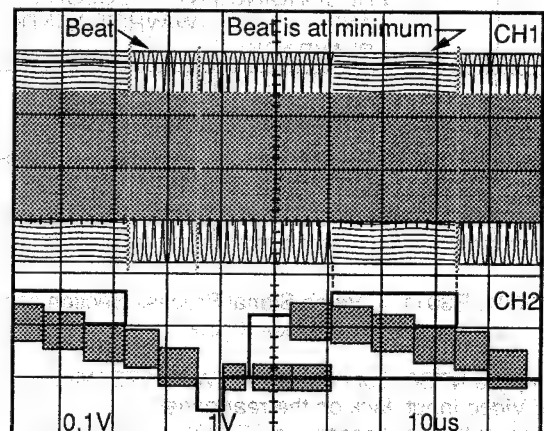


Fig. E6-3

3. Set the frequency of the signal generator to 3.5MHz again. And confirm that the beat is at minimum as shown in Fig. E6-2. If not, readjust R3010(SYNC TIP FREQ).

Method 2 (Alternative to Method 1)

Note:

Adjust Playback level before Deviation adjustment is performed as follows.

1. Connect the oscilloscope to TP3001.
2. Playback Color Bar portion of alignment tape.
3. Adjust R3041 (PB LEVEL) so that the A level in Fig. E8 of Page 2-35 is 2.00 ± 0.15 Vp-p.

A-1-2. Sync Tip Frequency adjustment

TP	ADJ.	MODE	INPUT
TP3002	R3010	SP REC	
TAPE	M.EQ.		SPEC.
BLANK TAPE	OSCILLOSCOPE NTSC VIDEO PATTERN GENERATOR FREQUENCY COUNTER		FREQUENCY is $3.5\text{MHz} \pm 50\text{KHz}$

Note:

TP3002, R3010 : Video Signal Process Section on the VCR Main C.B.A.

1. Connect shorted Phono Plugs to the Video Input Jack on the rear panel. (Do not supply any VIDEO signal.)
2. Connect the frequency counter to TP3002.
3. Make a recording in SP mode.
4. Adjust R3010 (SYNC TIP FREQUENCY) so that the frequency is $3.5\text{MHz} \pm 50\text{KHz}$.

Note:

First, turn R3010 fully clockwise, then adjust R3010.

A-2-2. Deviation adjustment

TP	ADJ.	MODE	INPUT
TP3001	R3011	SP SELF-RECORDING AND PLAYBACK	(VIDEO IN) NTSC COLOR BAR (W/WHITE WINDOW)
TAPE	M.EQ.		SPEC.
BLANK TAPE	OSCILLOSCOPE NTSC VIDEO PATTERN GENERATOR		$A=2.00 \pm 0.15\text{Vp-p}$

Note:

TP3001, R3011 : Video Signal Process Section on the VCR Main C.B.A.

1. Supply a NTSC Color Bar signal W/WHITE Window to the Video Input Jack on the rear panel.
2. Connect the oscilloscope to TP3001.
3. Set R3011 (DEVIATION) to the center position as shown in Fig. E6-4.

Center position of R3011

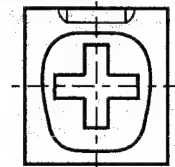


Fig. 6-4

4. Insert a cassette tape and make a recording in SP mode.
5. Playback the recording and confirm that the A level in Fig. E8 of Page 2-35 is 2.00 ± 0.15 Vp-p.
6. If not, turn R3011 clockwise to decrease or counterclockwise to increase the level. Repeat the steps 4 to 6 until the A level becomes 2.00 ± 0.15 Vp-p.

3-2-3. RECORDING CURRENT ADJUSTMENT

First, adjust Rec chroma level then, Rec Video level.

A-1. REC CHROMA LEVEL ADJUSTMENT

Purpose:

Set the optimum Record Chroma Level.

Symptom of Misadjustment :

If the Record Chroma Level is too high, Beats may be seen in the picture. If the Level is too low, the Color may be degraded.

TP	ADJ.	MODE	INPUT
TP3002	R3015	SLP REC	(VIDEO IN) NTSC COLOR BAR (W/WHITE WINDOW)
TAPE	M.EQ.		SPEC.
BLANK TAPE	OSCILLOSCOPE NTSC VIDEO PATTERN GENERATOR		Model : A,B,C,D,E,F,G $A=56 \pm 4\text{mVp-p}$ Model : H $A=60 \pm 4\text{mVp-p}$

Note:

TP3002, R3015,

(point (A), (B)) : Video Signal Process Section on the VCR Main C.B.A.

- 1) Connect TP3012 and +5V (TP+5V) with 100Ω resistor to eliminate luminance component.

(For early product)

Connect point (A) and +5V (point (B)) with 100Ω resistor as shown in Fig. E7-1.

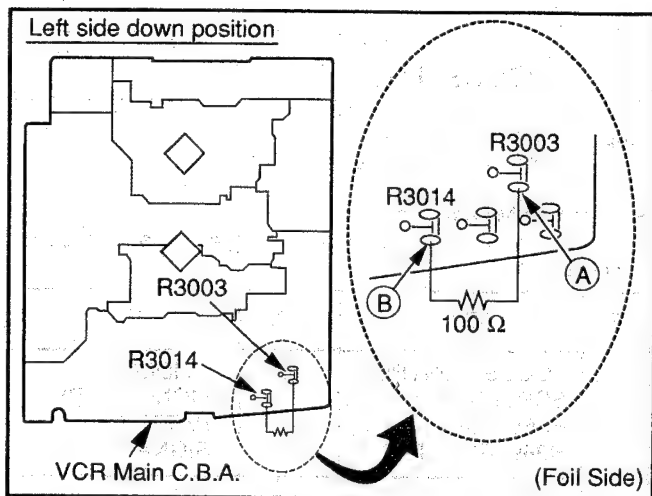


Fig. E7-1

- 2) Adjust R3015.
- 3) Disconnect TP3012 and +5V (TP+5V) after this adjustment is complete.

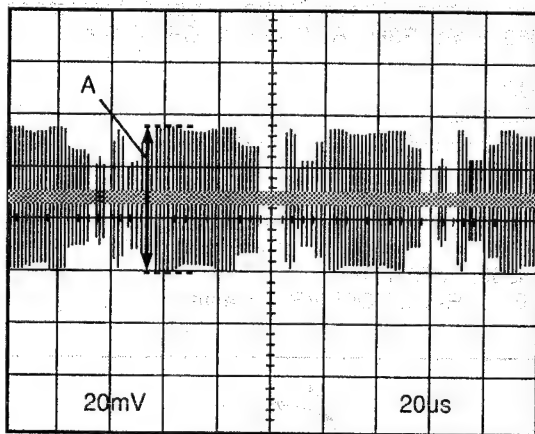


Fig. E7-2

A-2. REC VIDEO LEVEL ADJUSTMENT

Purpose :

Set the optimum Record Luminance Level.

Symptom of Misadjustment :

If the record Luma Level is too high, Video may over load. If the Level is too low, the S/N Ratio deteriorates.

TP	ADJ.	MODE	INPUT
TP3002	R3003	SLP REC	(VIDEO IN) NTSC COLOR BAR (W/WHITE WINDOW)
TAPE	M.EQ.		SPEC.
BLANK TAPE	OSCILLOSCOPE NTSC VIDEO PATTERN GENERATOR		Model : A,B,C,D,E,F,G $B=220 \pm 10 \text{ mVp-p}$ Model : H $B=230 \pm 10 \text{ mVp-p}$

Note:

TP3002, R3003 : Video Signal Process Section on the VCR Main C.B.A.

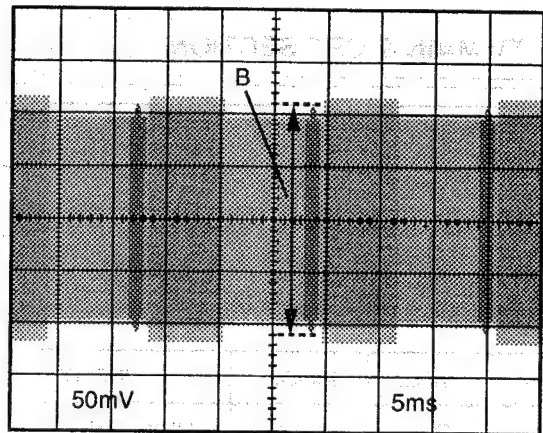


Fig. E7-3

3-2-4. PLAYBACK LEVEL ADJUSTMENT

Purpose:

To align the Playback Level of the Video Signal with the Recording (E-E) Level.

Symptom of Misadjustment:

Playback interchangeability is inadequate.

TP	ADJ.	MODE	INPUT
TP3001	R3041	SP SELF-RECORDING AND PLAYBACK	(VIDEO IN) NTSC COLOR BAR (W/WHITE WINDOW)
TAPE	M.EQ.		SPEC.
BLANK TAPE	OSCILLOSCOPE NTSC VIDEO PATTERN GENERATOR		$A=2.00 \pm 0.15 \text{ Vp-p}$

Note:

TP3001, R3041 : Video Signal Process Section on the VCR Main C.B.A.

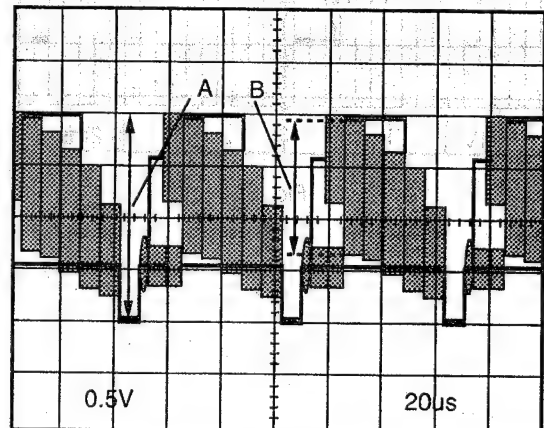


Fig. E8

Note:

Confirm that the Cyan level (B) is $1.26 \pm 0.3 \text{ Vp-p}$.

3-3. TV MAIN & CRT SECTION

3-3-1. SUB CONTRAST ADJUSTMENT

Purpose:

To set the optimum Sub Contrast Level.

Symptom of Misadjustment:

The picture is too dark or too light.

TP	ADJ.	MODE	INPUT
TP13 or TP50	R325	STOP	(VIDEO IN) CROSSHATCH PATTERN SIGNAL
TAPE	M.EQ.	SPEC.	
	OSCILLOSCOPE NTSC VIDEO PATTERN GENERATOR	Model : A, B, C, D $A=1.9 \pm 0.1V_{p-p}$ Model : E, F, G, H $A=2.7 \pm 0.1V_{p-p}$	

Note:

TP50 : CRT C.B.A.
R325, TP13 : TV Main C.B.A.

(SETUP)

Reset the control levels to the factory -set levels using the remote control.

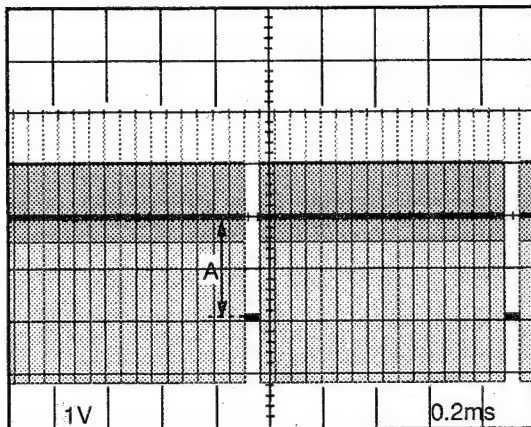


Fig. E9

3-3-2. FOCUS, SCREEN, CUT OFF, DRIVE ADJUSTMENT

Purpose:

To set the optimum Focus and Screen.

Symptom of Misadjustment:

The picture is out of Focus and there will be an improper screen color mix.

TP	ADJ.	MODE	INPUT
	FOCUS CONTROL SCREEN CONTROL R365, R363, R369, R370, R371	STOP	(VIDEO IN) MONOSCOPE PATTERN SIGNAL
TAPE	M.EQ.	SPEC.	
	NTSC VIDEO PATTERN GENERATOR	Refer to Descriptions below	

Note:

Focus Control, Screen Control : Flyback Transformer
R363, R365, R369, R370, R371 : CRT C.B.A.

(SETUP)

- Controls
R363 (B-DRIVE VR) : Center
R365 (R-DRIVE VR) : Counterclockwise 30 degrees from center on Component Side, refer to Fig. E10.
R369, R370, R371
(B-,G-,R- CUT OFF VR) : Center

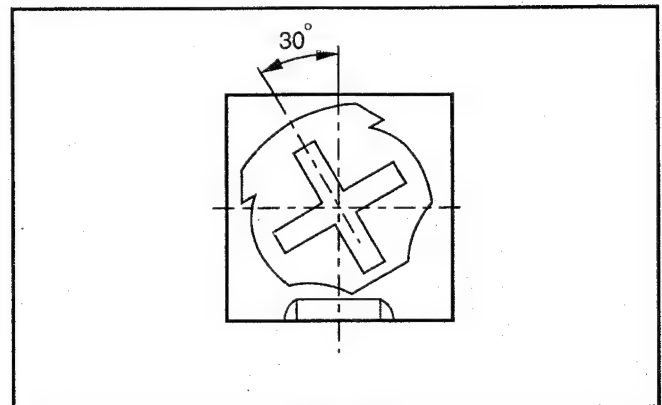


Fig. E10

- Adjust the Focus Control on Flyback Transformer to Sharpest Picture position.
- Turn the Screen Control on Flyback Transformer fully counterclockwise.
- Set the Service Switch on the TV Main C.B.A. to Service Position.
- Turn the Screen Control on Flyback Transformer clockwise carefully and stop at the point where any color is first observed.

5. Adjust R369 (B-CUT OFF) and R371 (R-CUT OFF) so that the Horizontal line is white.
6. Set the Service Switch to the Normal Position.
7. Adjust R324(SUB BRIGHTNESS) so that the picture has adequate brightness.
8. Adjust R365(R-DRIVE) and R363(B-DRIVE) so that the whole screen is white.

3-3-3. TINT ADJUSTMENT

Purpose :

To set the standard color phase.

Symptom of Misadjustment :

Color phase will be shifted.

(SETUP)

Reset the control levels to the factory -set levels using the remote control.

TP	ADJ.	MODE	INPUT
TP46B	R622	STOP	(VIDEO IN) RAINBOW COLOR BAR
TAPE	M.EQ.		SPEC.
	OSCILLOSCOPE NTSC VIDEO PATTERN GENERATOR		A : B=1 : 1

Note:

TP46B, R622 : TV Main C.B.A.

Turn R622 (SUB TINT) on the TV Main C.B.A. so that the waveform becomes A : B = 1 : 1.

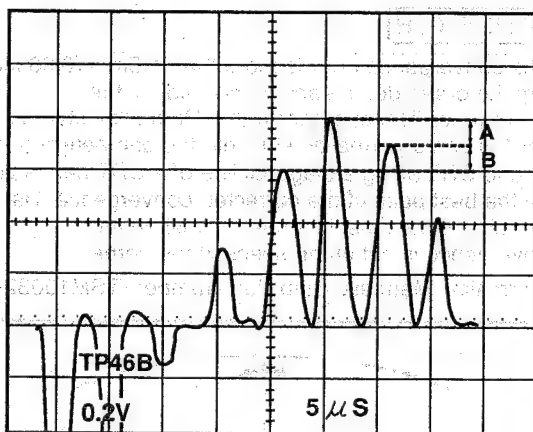


Fig. E11

3-3-4. PURITY ADJUSTMENT

Purpose:

To set the uniform white over the whole screen.

Symptom of Misadjustment:

The white screen will vary from area to area.

TP	ADJ.	MODE	INPUT
	Pair of 4-Pole Magnets, Pair of 6-Pole Magnets, Pair of Purity Magnets, Deflection Yoke	STOP	(VIDEO IN) CROSSHATCH PATTERN SIGNAL & WHITE PATTERN SIGNAL
TAPE	M.EQ.		SPEC.
	NTSC VIDEO PATTERN GENERATOR/WHITE PATTERN GENERATOR DEGAUSSING COIL		Refer to descriptions below

Note:

Pair of 4-Pole Magnets, Pair of 6-Pole Magnets,
Pair of Purity Magnets, Deflection Yoke : CRT Unit

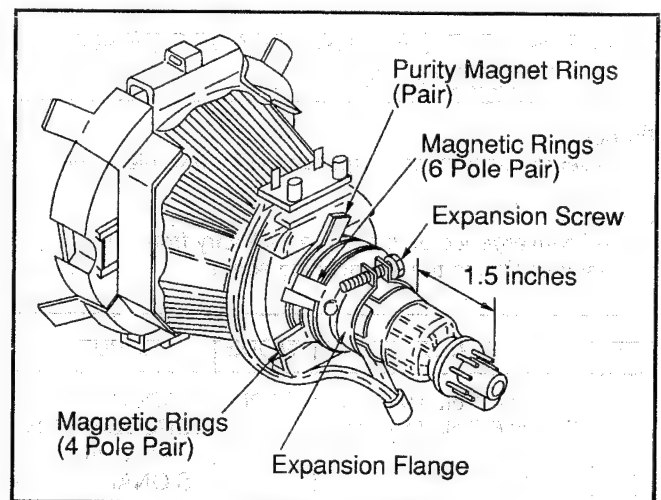


Fig. E12

1. Mount and secure Deflection Yoke so that the rear edge of expansion flange is 1.5 inches from the tips of the CRT pins as shown in Fig. E12.
2. Supply the Crosshatch Pattern Signal.
3. Degauss the CRT by the Degaussing Coil.
4. Adjust the pair of 4 - Pole Magnets so that B and R at the center of CRT overlap each other.
5. Adjust the pair of 6-Pole Magnets so that B and R which overlapped each other in Step 4 overlap G.
6. Supply the White Pattern Signal.
7. Remove the wedges from the CRT.
Loosen the expansion screw on the Deflection Yoke, and move the Deflection Yoke toward the CRT.
8. Turn the R370 (G-CUT OFF) fully counterclockwise. Adjust the pair of Purity Magnets so that the distorted color areas are approximately across from each other. Move the Deflection Yoke carefully backward (without rotating it), until the distorted color areas disappear from the screen.
9. Supply Crosshatch Pattern Signal again. Confirm that the Center Bar is at the horizontal center line of the CRT and the V- Center Bar is at the vertical center line of the CRT. Then tighten the Expansion Screw.
10. Set the Service Switch on the TV Main C.B.A. to Service Position. Adjust the R370 (G-CUT OFF) so that the Horizontal line is white.
11. Set the Service Switch to Normal Position. Make sure that the whole screen is white. If not, adjust R365 (R-DRIVE) and R363 (B-DRIVE).

3-3-5. STATIC CENTRAL CONVERGENCE ADJUSTMENT

Purpose:

To set the uniform convergence over the whole screen.

Symptom:

The convergence on the screen will vary from the center portion to the surrounding edges.

TP	ADJ.	MODE	INPUT
	Pair of 4-Pole Magnets, Pair of 6-Pole Magnets	STOP	(VIDEO IN) CROSSHATCH PATTERN SIGNAL
TAPE	M.EQ.	SPEC.	
	NTSC VIDEO PATTERN GENERATOR	Refer to descriptions below	

Note:

Pair of 4 - Pole Magnets,
Pair of 6 - Pole Magnets : CRT Unit

1. Adjust the Pair of 4 - Pole Magnets so that B and R, at center of CRT overlap each other.
2. Adjust the Pair of 6 - Pole Magnets so that B and R which overlapped each other in step 1 overlaps G.

3-3-6. DYNAMIC CONVERGENCE ADJUSTMENT

Purpose:

To set the uniform convergence over the whole screen.

Symptom:

The convergence on the screen will vary at the sides of CRT.

TP	ADJ.	MODE	INPUT
	DEFLECTION YOKE	STOP	(VIDEO IN) CROSSHATCH PATTERN SIGNAL & WHITE PATTERN SIGNAL
TAPE	M.EQ.		SPEC.
	NTSC VIDEO PATTERN GENERATOR/WHITE PATTERN GENERATOR		Refer to descriptions below

Note:

Deflection Yoke : CRT Unit

1. Supply the Crosshatch Pattern Signal.
2. Hold Deflection Yoke and wiggle it up and down to correct Crosshatch Pattern position (Refer to Fig. E13).
3. Hold Deflection Yoke and wiggle it right to left to correct Crosshatch Pattern position (Refer to Fig. E14).
4. Insert three wedges as shown in Fig. E15-1 : Model , A, B, C, D or Fig. E15-2 : Model E, F, G, H to maintain the correct crosshatch pattern position.

(Confirmation of white)

1. Supply White Pattern Signal.
2. Confirm purity.
3. If the purity is not sufficient, re-adjust purity.

Model : E, F, G, H

4. If the convergence error is more than 1.5mm (0.06 inch) from the green dot at each corner, adjust the convergence at that corner with a Permalloy Magnetic Strip*. Insert a permalloy strip into the gap between the DY and CRT along a diagonal line of a CRT bell. Adjust it at the best point of the corrected convergence. Use a permalloy strip at each corner only when the convergence is out of the specs at the corner.

* Permalloy Magnetic Strip Part Number (TSM10032-2).

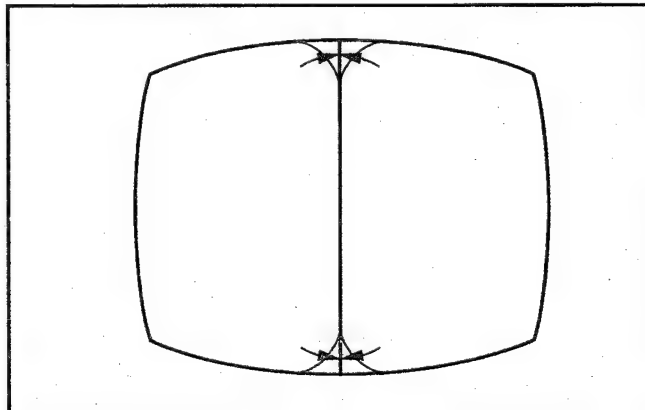


Fig. E13

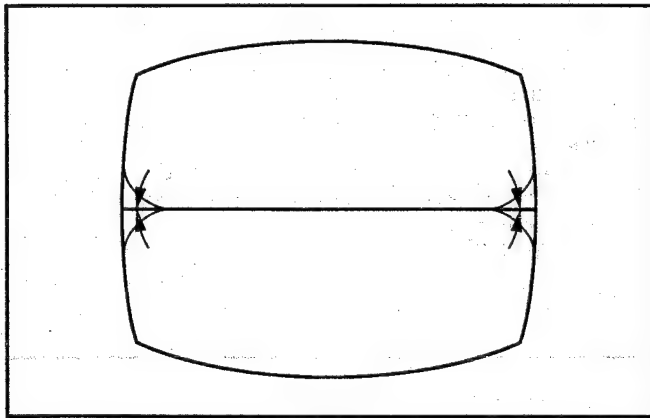


Fig. E14

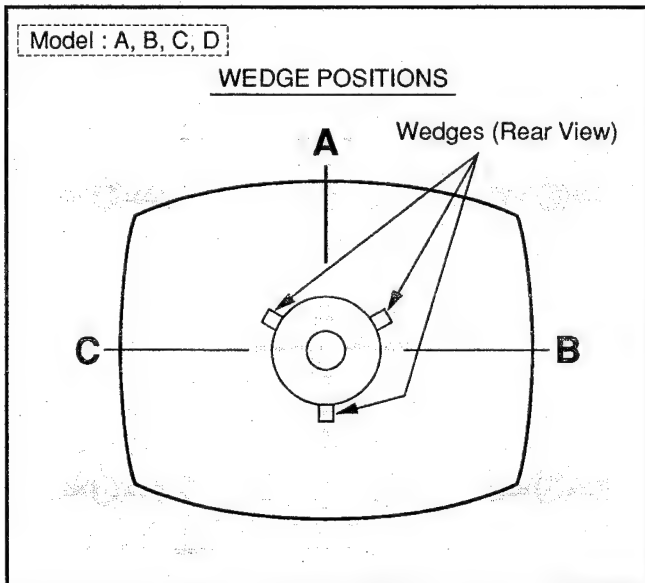


Fig. E15-1

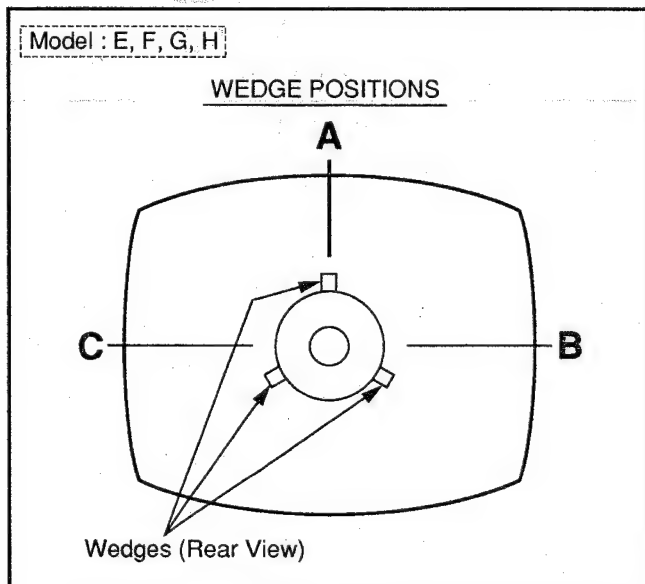


Fig. E15-2

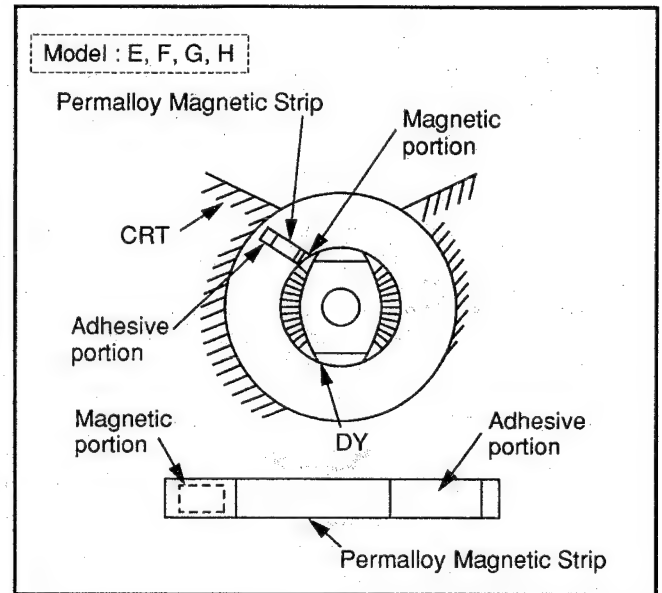


Fig. E16

3-3-7. VERTICAL HEIGHT ADJUSTMENT

Purpose :

To set the standard vertical picture size.

Symptom of Misadjustment :

The picture size is on the vertical axis is abnormal.

TP	ADJ.	MODE	INPUT
	R410, J92 (JUMPER L), J91 (JUMPER R)	STOP	(VIDEO IN) MONOSCOPE PATTERN SIGNAL
TAPE	M.EQ.		SPEC.
	NTSC VIDEO PATTERN GENERATOR		Refer to Fig. E17-1 or Fig. E17-2

Note :

R410, J92 (JUMPER L) , J91 (JUMPER R) :TV Main
C.B.A.

Model : A, B, C, D

1. Adjust R410 (V-HEIGHT) so that the top 3rd line just disappears from the edge of the screen as shown in Fig. E17-1.
2. Confirm that 9th line is in view and 11th line is out of view.
If not, readjust R410(V-HEIGHT).
3. If the picture is shifted right and the small circles in the corners do not maintain a perfect circle inside the screen, cut the J92 (Jumper L).
4. If the picture is shifted left and the small circles in the corners do not maintain a perfect circle inside the screen, cut the J91 (Jumper R).

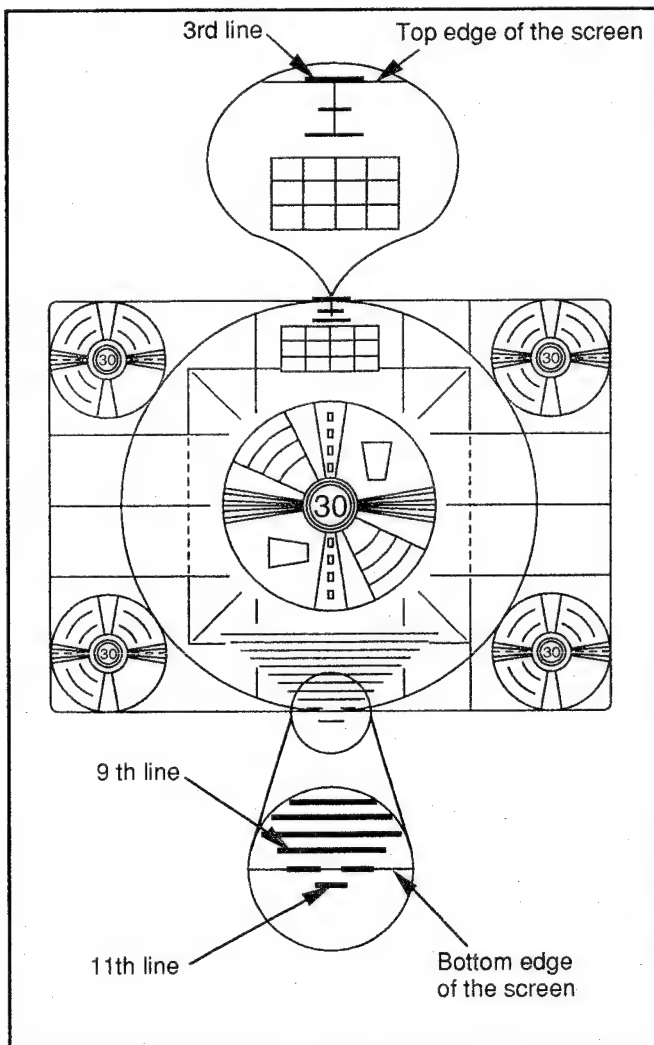


Fig. E17-1

Model : E, F, G, H

1. Adjust the R410 (V-HEIGHT) so that the top 4th line just disappears from the edge of the screen. Then adjust so that the bottom 4th line is also out of view (Refer to Fig. E17-2).
2. If the picture is shifted right and the small circles in the corners do not maintain a perfect circle inside the screen, cut the J92 (Jumper L).
3. If the picture is shifted left and the small circles in the corners do not maintain a perfect circle inside the screen, cut the J91 (Jumper R).

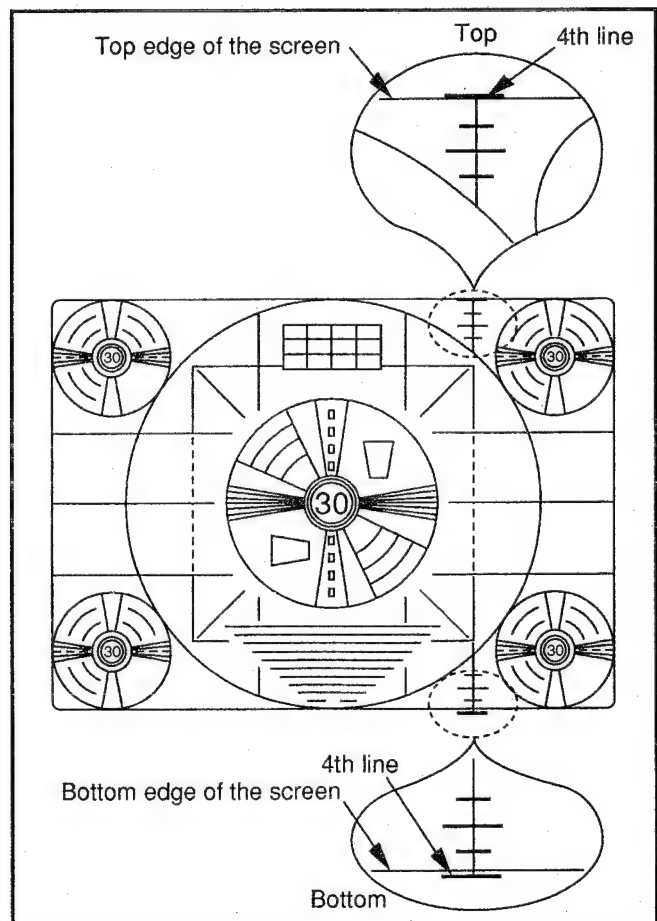
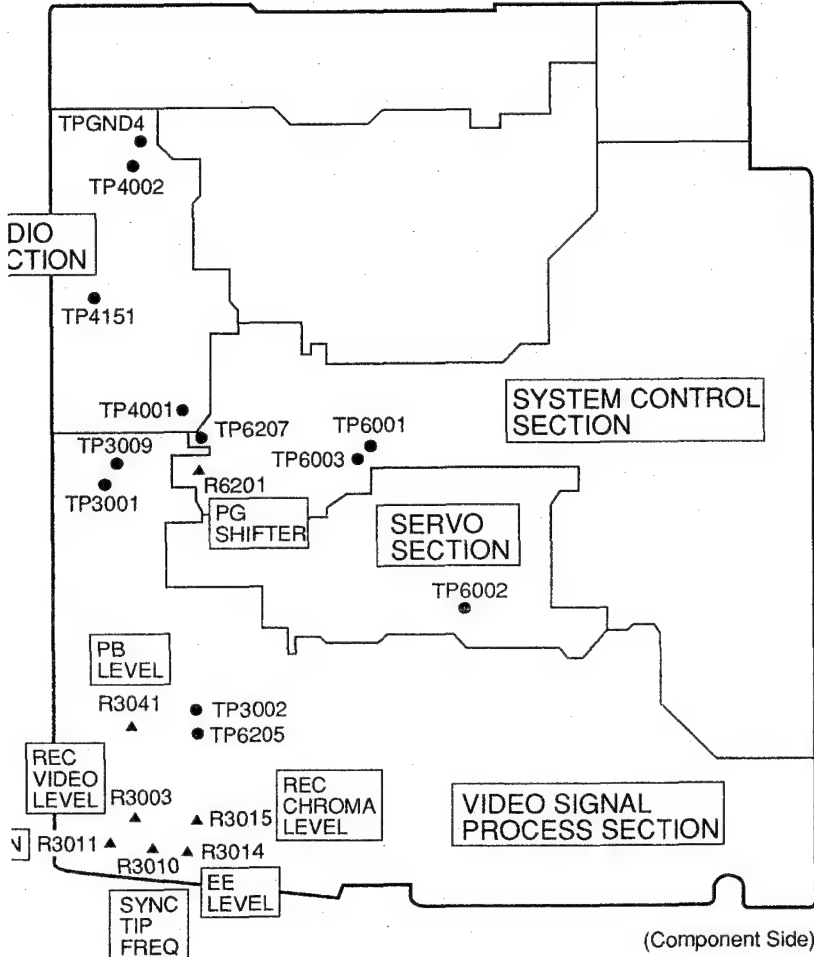


Fig. E17-2

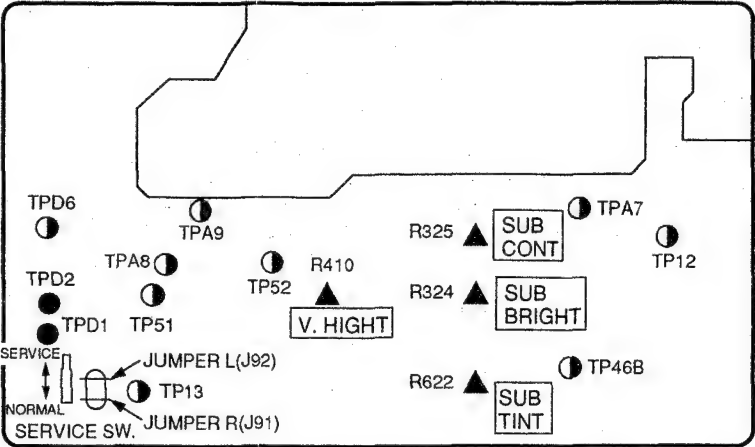
ADJUSTMENT POINTS

C.B.A.

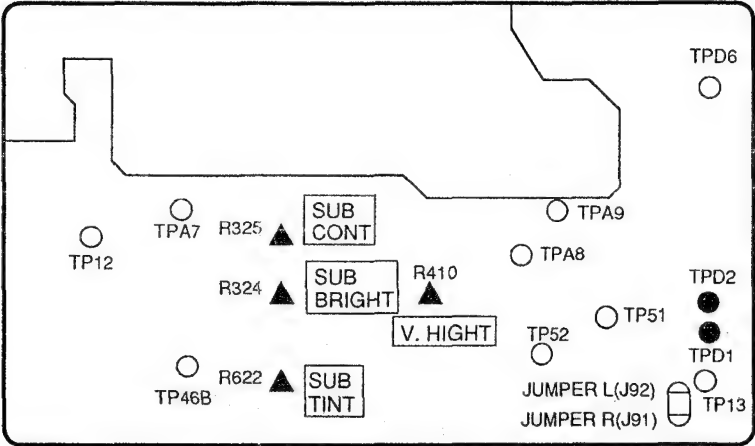


(Component Side)

TV Main C.B.A.



(Component Side)

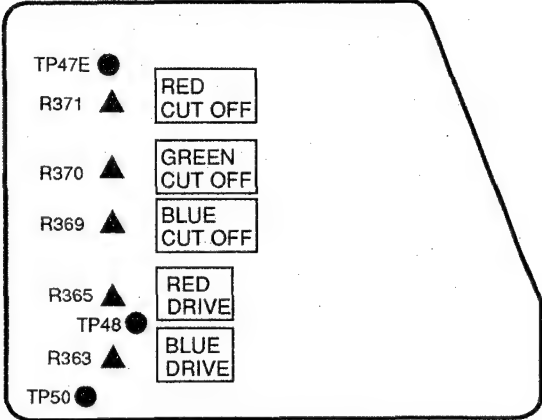


(Foil Side)

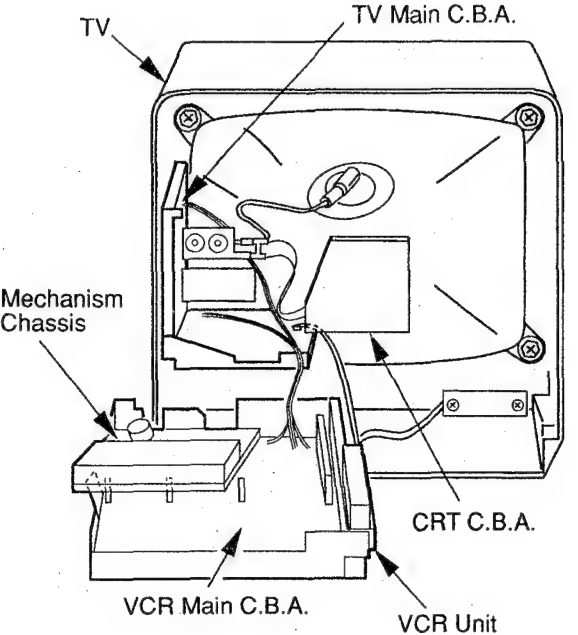
LEADED COMPONENTS LOCATION CHART FOR TV MAIN C.B.A.

TP	Component Lead (Component Side)
TP12	R333
TP13	J57
TP46B	R603
TP51	D304
TP52	J10
TPA7	J22
TPA8	D558
TPA9	D560
TPD6	D553

CRT C.B.A.

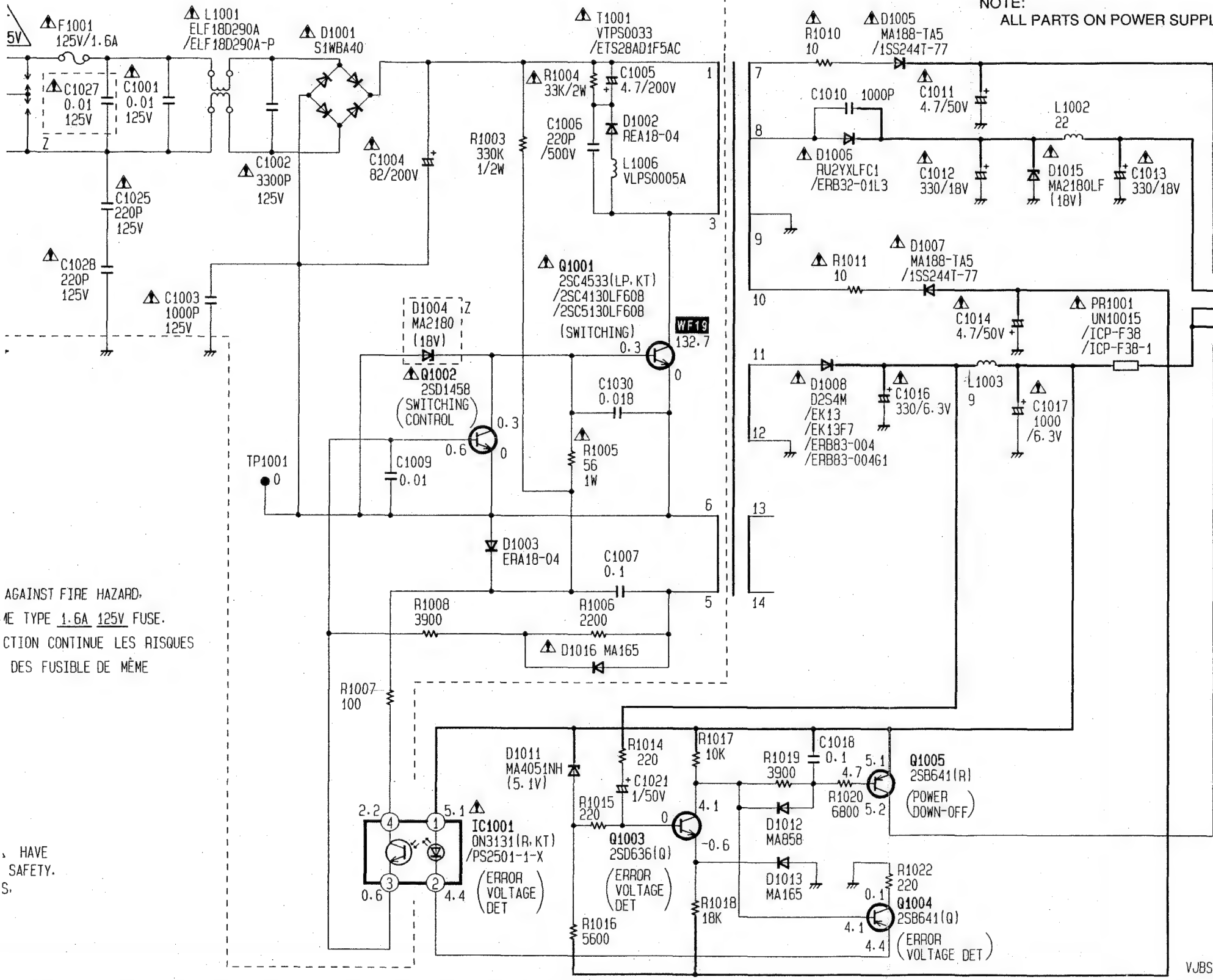


(Component Side)



SCHEMATIC DIAGRAM

AL AND USE AN ISOLATION TRANSFORMER WHEN SERVICING.



AGAINST FIRE HAZARD,
ME TYPE 1.6A 125V FUSE.
CTION CONTINUE LES RISQUES
DES FUSIBLE DE MÊME

HAVE
SAFETY.
S.

NOTE:
FOR SCHEMATIC AND C.B.A. DIAGRAM NOTES, REFER
TO BEGINNING OF SCHEMATIC SECTION (SECTION III)

NOTE:
ALL PARTS ON POWER SUPPLY ASS'Y HAVE LEADS.

P1001 TO MAIN	
2	UNSW +37V P1201-2
1	UNSW +14V P1201-1
5	UNSW +5V (VIDEO) P1201-5
6	UNSW +5V (SYS. CTL) P1201-6
3	POWER DOWN (L) P1201-3
7	GND P1201-7
4	GND P1201-4

POWER SUPPLY	
TRANSISTOR	
Q1001	D-4
Q1002	D-3
Q1003	E-1
Q1004	F-1
Q1005	F-2
IC	
IC1001	D-1
CONNECTOR	
P1001	H-4
TEST POINT	
TP1001	C-3

UNLESS OTHERWISE SPECIFIED:
WATTAGE OF RESISTORS IS 1/4W.

SERVICE CAUTION

SERVICE PROCEDURE FOR
POWER SUPPLY ASS'Y

- CHECK VOLTAGE AT PINS OF P1201 ON THE MAIN C.B.A. (SEE FIG-1)
- DISCONNECT AC PLUG AND REMOVE THE FLAT CABLE FROM P1201.
- SHORT CHECK AT TERMINAL OF P1201 ON THE MAIN C.B.A. (SEE FIG-2)
- REPAIR THE MAIN C.B.A.
- REMOVE THE SHIELD CASE FROM THE POWER SUPPLY ASS'Y AND RECONNECT THE FLAT CABLE WITH P1201 FOR REPAIR.

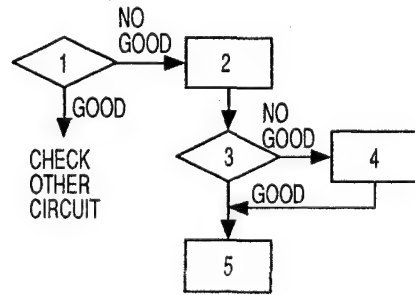


FIG-1
VOLTAGES IN STOP
MODE UNDER NORMAL
CONDITIONS

PIN NO.	VOLTAGE
1	13.5V
2	36.5V
3	5.2V
4	0V
5	5.2V
6	5.2V
7	0V

NOTE:
THE VOLTAGES OF
THIS TABLE ARE
APPROX.

FIG-2
RESISTANCE UNDER
NORMAL CONDITIONS.

PIN NO.	RESISTANCE
1	MORE THAN 30Ω
2	MORE THAN 500Ω
3	MORE THAN 500Ω
4	-----
5	MORE THAN 25Ω
6	MORE THAN 25Ω
7	-----

NOTE:
1. PIN 4 OF THE TERMINALS
SHOULD BE GROUND IN
THIS MEASUREMENT.
2. RESISTANCES IN THIS
TABLE ARE APPROX.

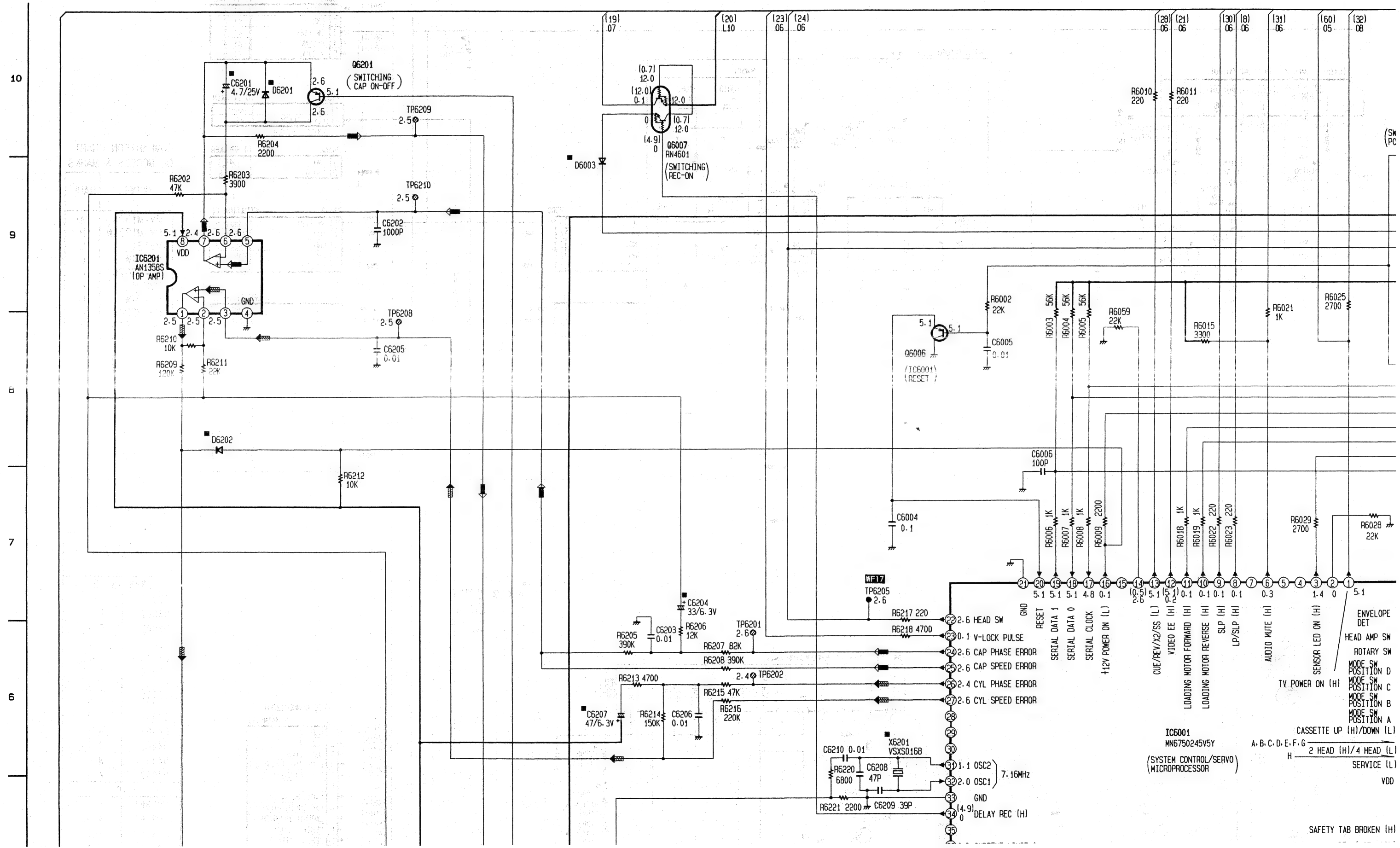
VJBS01039

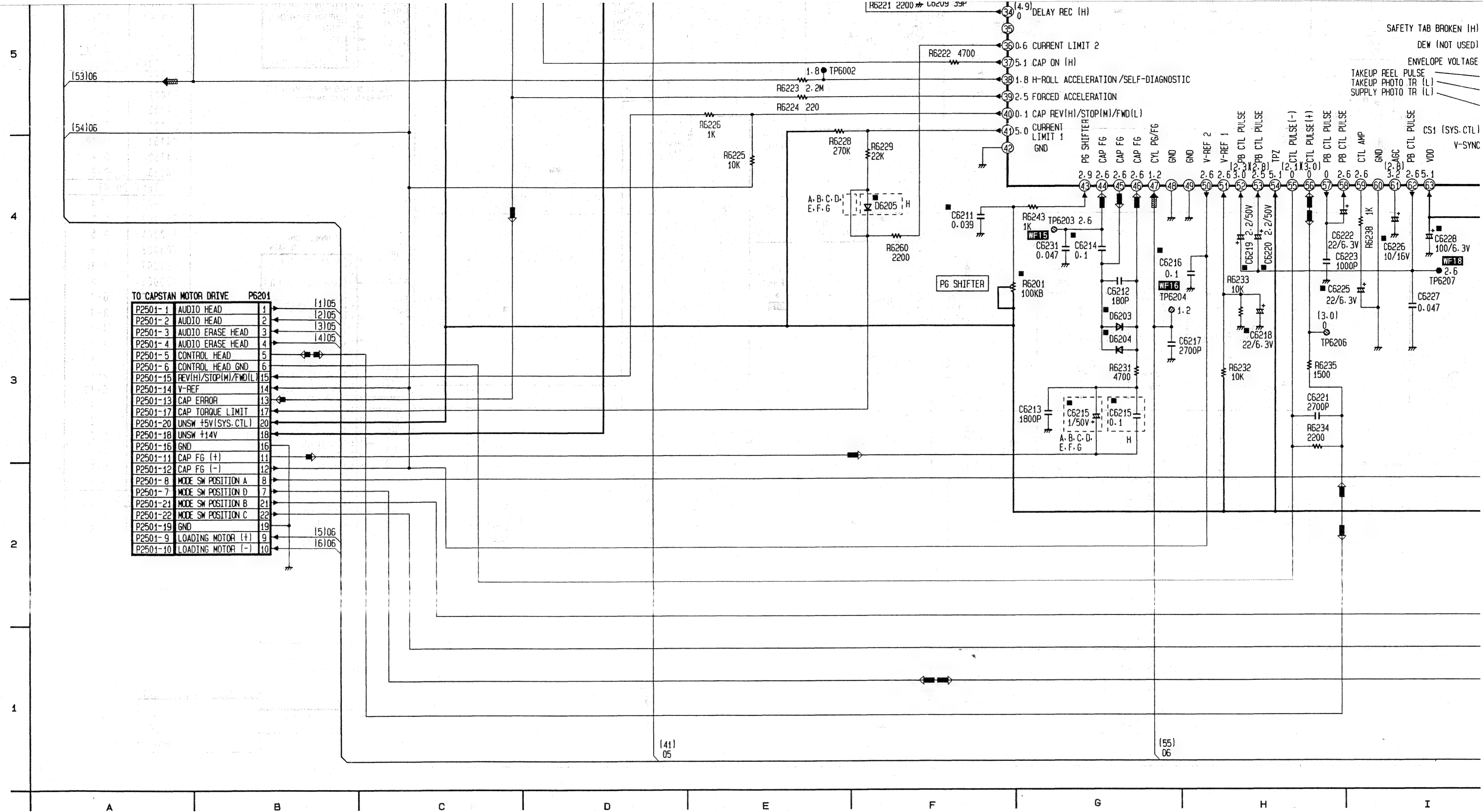
MAIN I (POWER SUPPLY/CYLINDER DRIVE/SYSTEM CONTROL/SERVO) SCHEMATIC DIAGRAM


IMPORTANT
COMPONENT
SPECIAL (WHEN REPL)
USE ONLY

← CAPSTAN SERVO

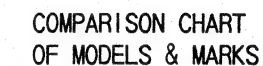
← CYLINDER SERVO





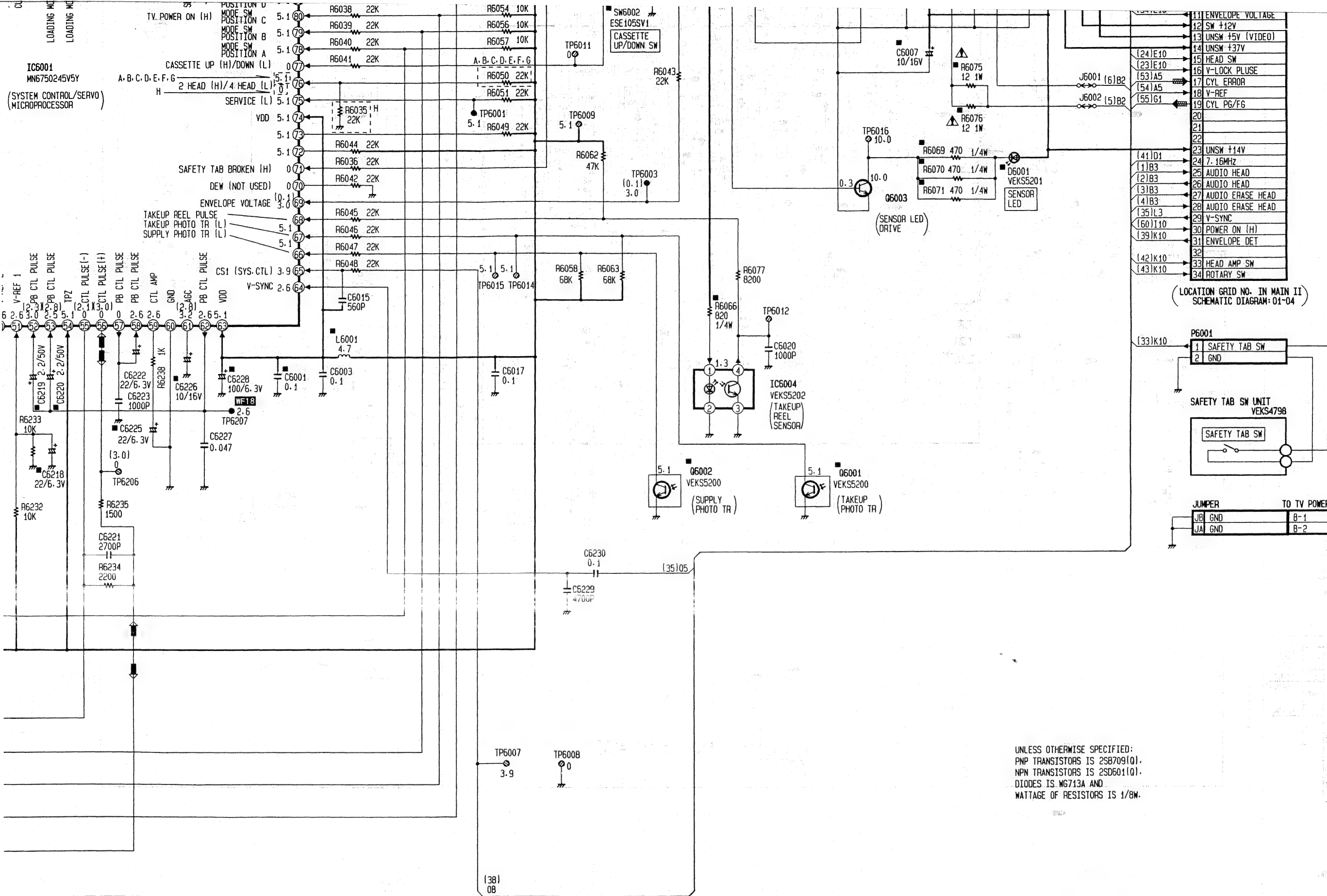
COMPONENTS IDENTIFIED BY THE SIGN  HAVE SPECIAL CHARACTERISTICS IMPORTANT FOR SAFETY. WHEN REPLACING ANY OF THESE COMPONENTS, USE ONLY THE SPECIFIED PARTS.

FOR SCHEMATIC AND C.B.A. DIAGRAM NOTES, REFER
TO BEGINNING OF SCHEMATIC SECTION (SECTION III)



MODEL	MARK
PV-M1324	A
PV-M1324W	B
VV134	C
VV134W	D
PV-M2024	E
VV204	F
VV204W	G
PV-M2044	H
NOT USED	Z

MAIN 1	
TRANSISTOR	
Q1201	M-10
Q1202	M-9
Q6001	M-3
Q6002	L-3
Q6003	M-5
Q6004	J-10
Q6005	I-10
Q6006	F-8
Q6007	E-10
Q6201	C-10
IC	
IC6001	H-6
IC6003	M-7
IC6004	L-4
IC6201	A-9
CONNECTOR	
P1201	O-9
P6001	O-4



Q6005	I-10
Q6006	F-8
Q6007	E-10
Q6201	C-10

IC	
IC6001	H-6
IC6003	M-7
IC6004	L-4
IC6201	A-9

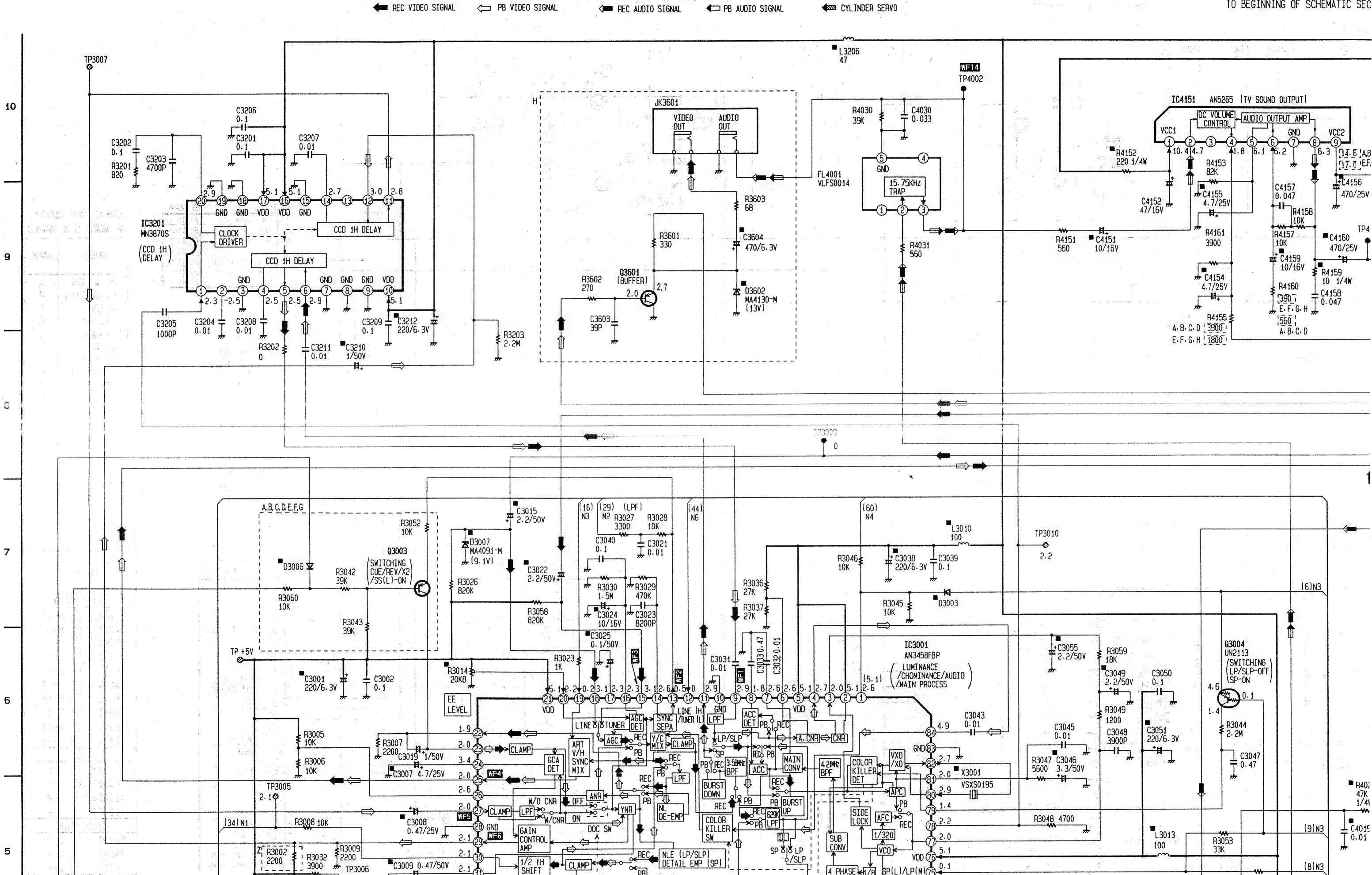
CONNECTOR	
P1201	O-9
P6001	O-4
P6201	B-4

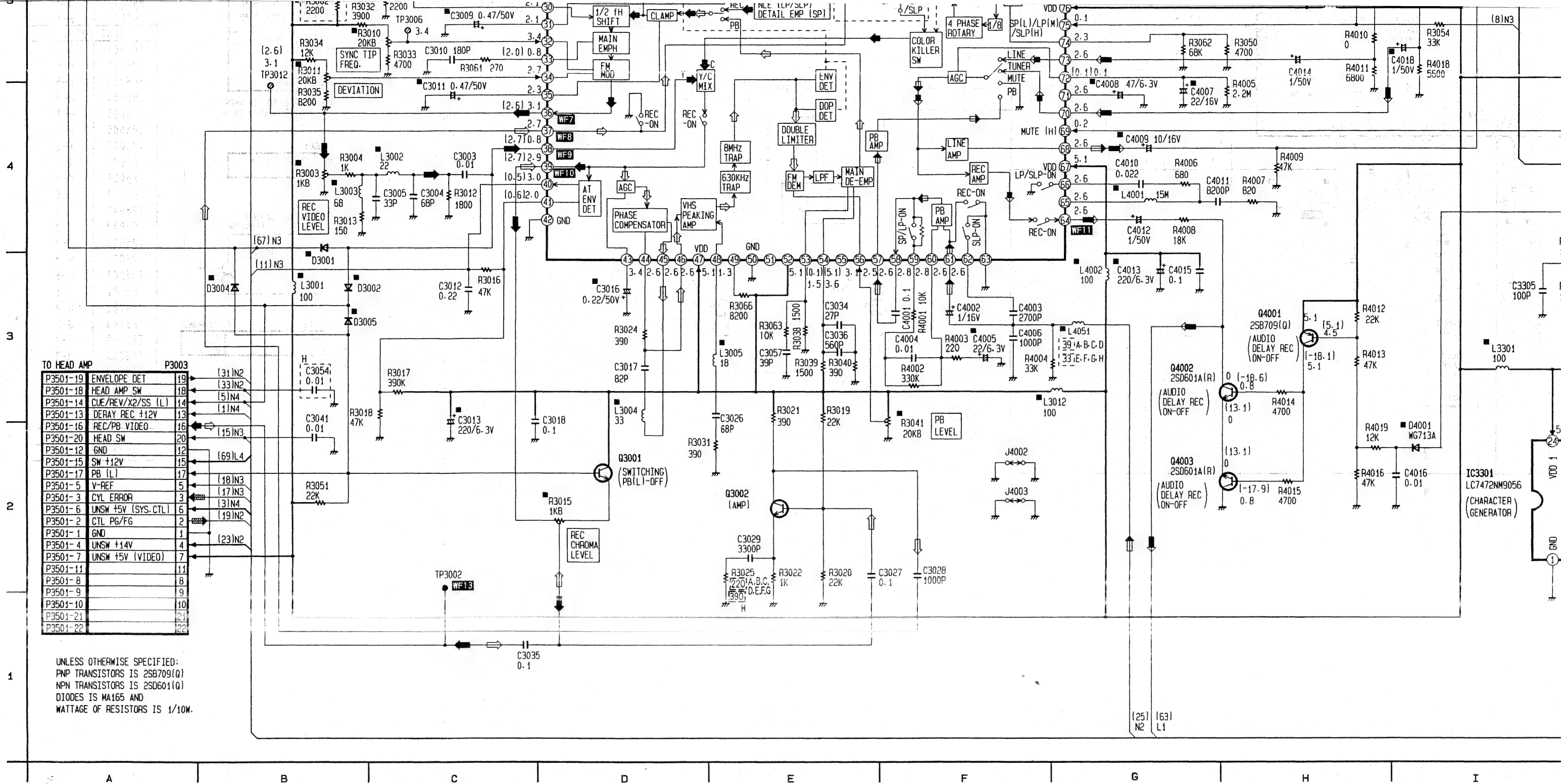
TEST POINT	
TP6001	K-5
TP6002	E-5
TP6003	L-5
TP6004	M-8
TP6005	M-8
TP6006	N-8
TP6007	K-2
TP6008	K-2
TP6009	K-5
TP6011	K-6
TP6012	L-4
TP6014	K-4
TP6015	K-4
TP6016	M-5
TP6201	E-6
TP6202	E-6
TP6203	G-4
TP6204	G-4
TP6205	F-7
TP6206	H-3
TP6207	I-4
TP6208	C-8
TP6209	C-10
TP6210	C-9

ADJUSTMENT	
R6201	G-4

MAIN II (SIGNAL PROCESS/AUDIO) SCHEMATIC DIAGRAM


NOTE:
FOR SCHEMATIC AND C.B.A. DIAG
TO BEGINNING OF SCHEMATIC SEC

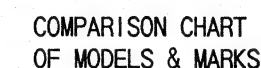




3-9

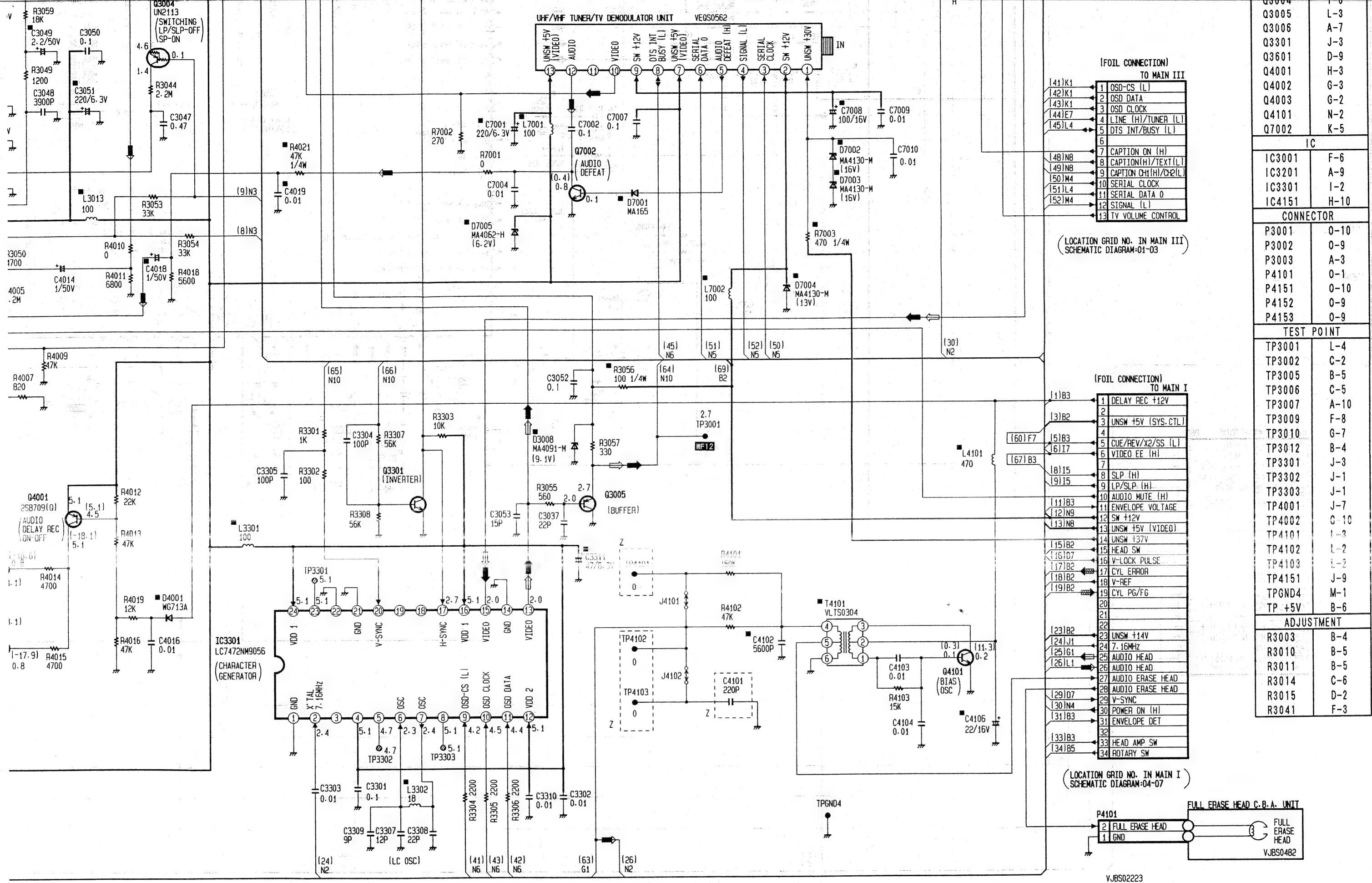
3-10

IMPORTANT SAFETY NOTICE:
COMPONENTS IDENTIFIED BY THE SIGN  HAVE
SPECIAL CHARACTERISTICS IMPORTANT FOR SAFETY.
WHEN REPLACING ANY OF THESE COMPONENTS,
USE ONLY THE SPECIFIED PARTS.



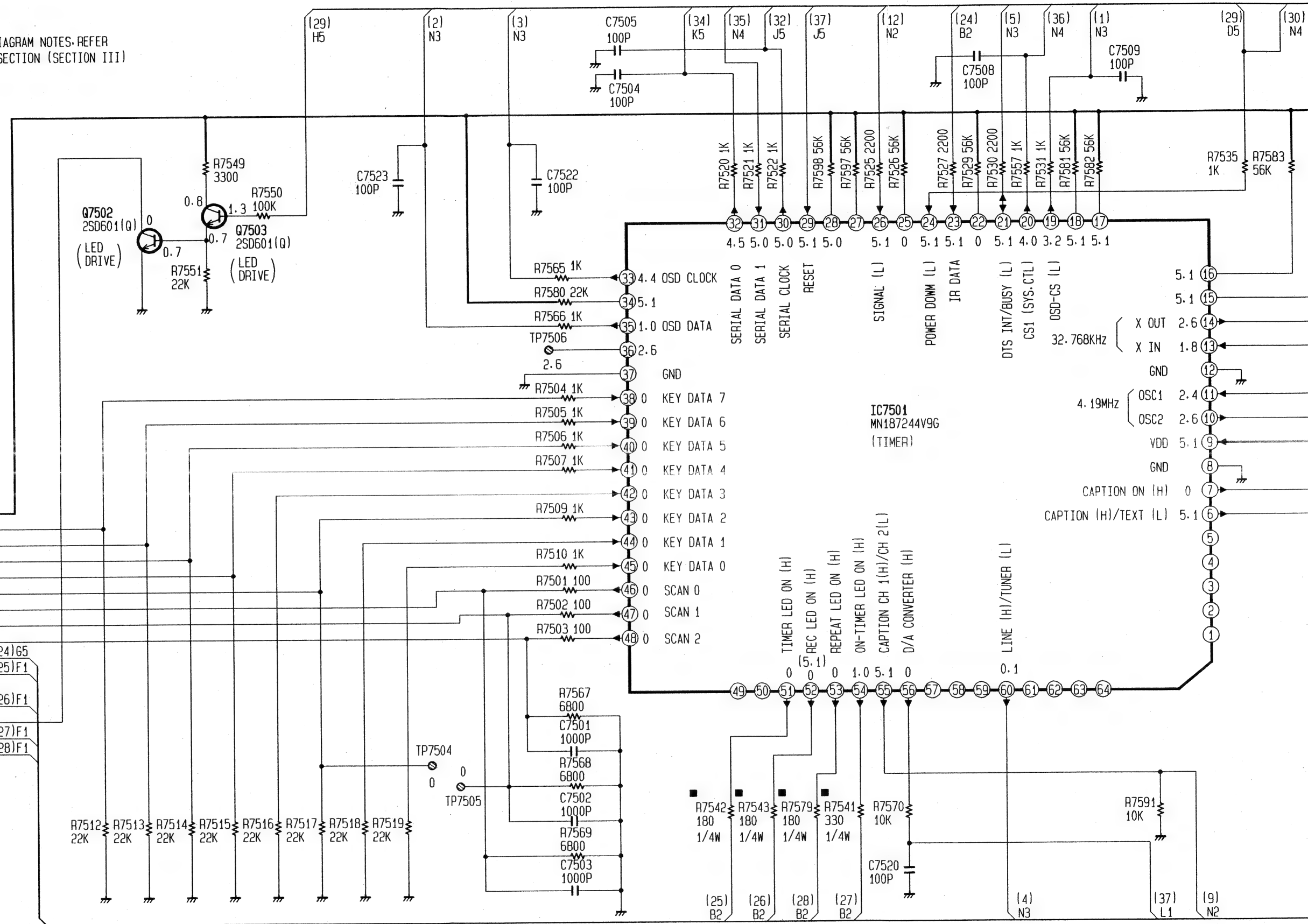
MODEL	MARK
PV-M1324	A
PV-M1324W	B
VV134	C
VV134W	D
PV-M2024	E
VV204	F
VV204W	G
PV-M2044	H
NOT USED	Z

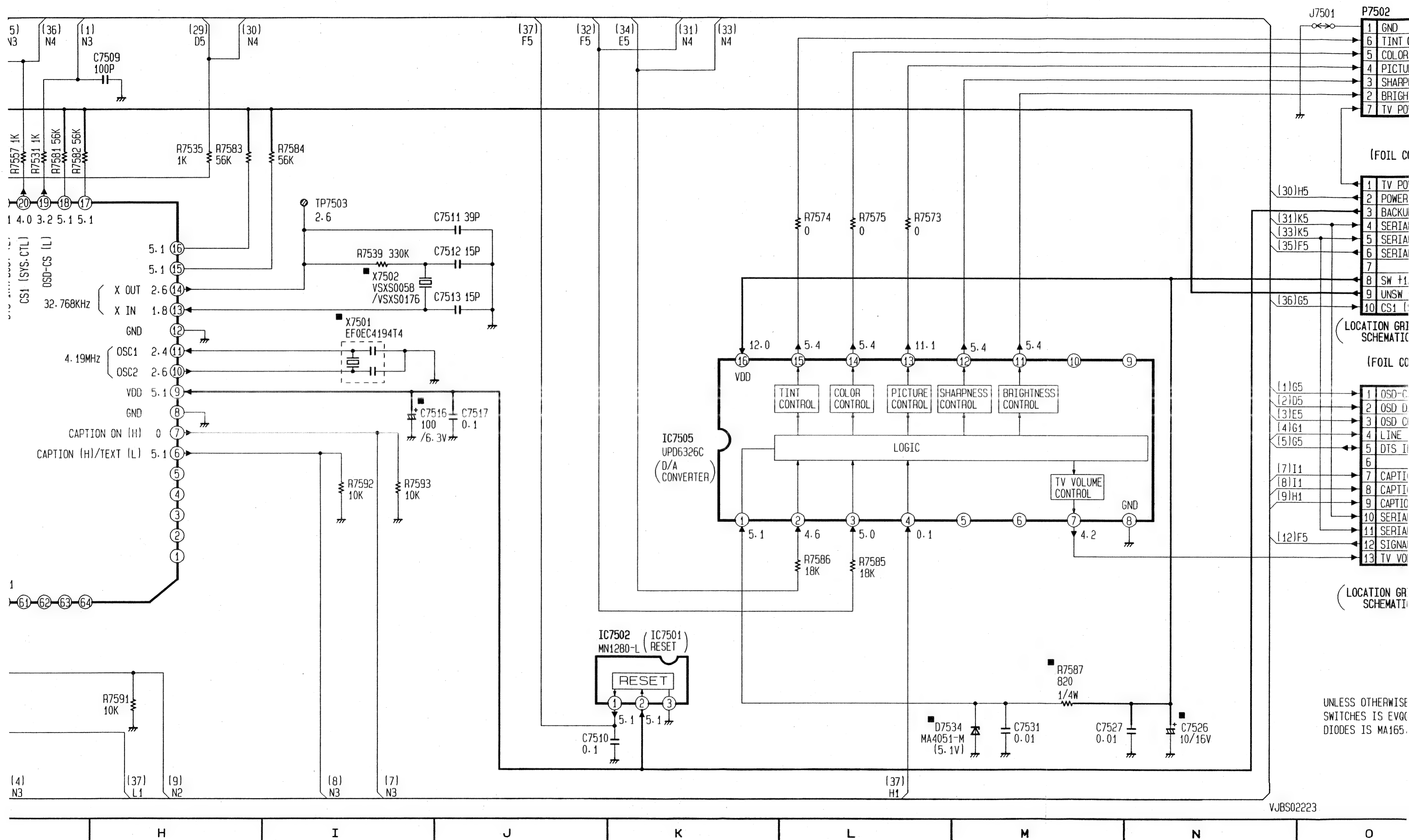
MAIN 11	
TRANSISTOR	
Q3001	D-1
Q3002	E-2
Q3003	C-7
Q3004	I-6
Q3005	L-3
Q3006	A-7
Q3301	J-3
Q3601	D-9
Q4001	H-3
Q4002	G-3
Q4003	G-2
Q4101	N-2
Q7002	K-5
IC	
IC3001	F-6
IC3201	A-9
IC3301	I-2
IC4151	H-10
CONNECTOR	

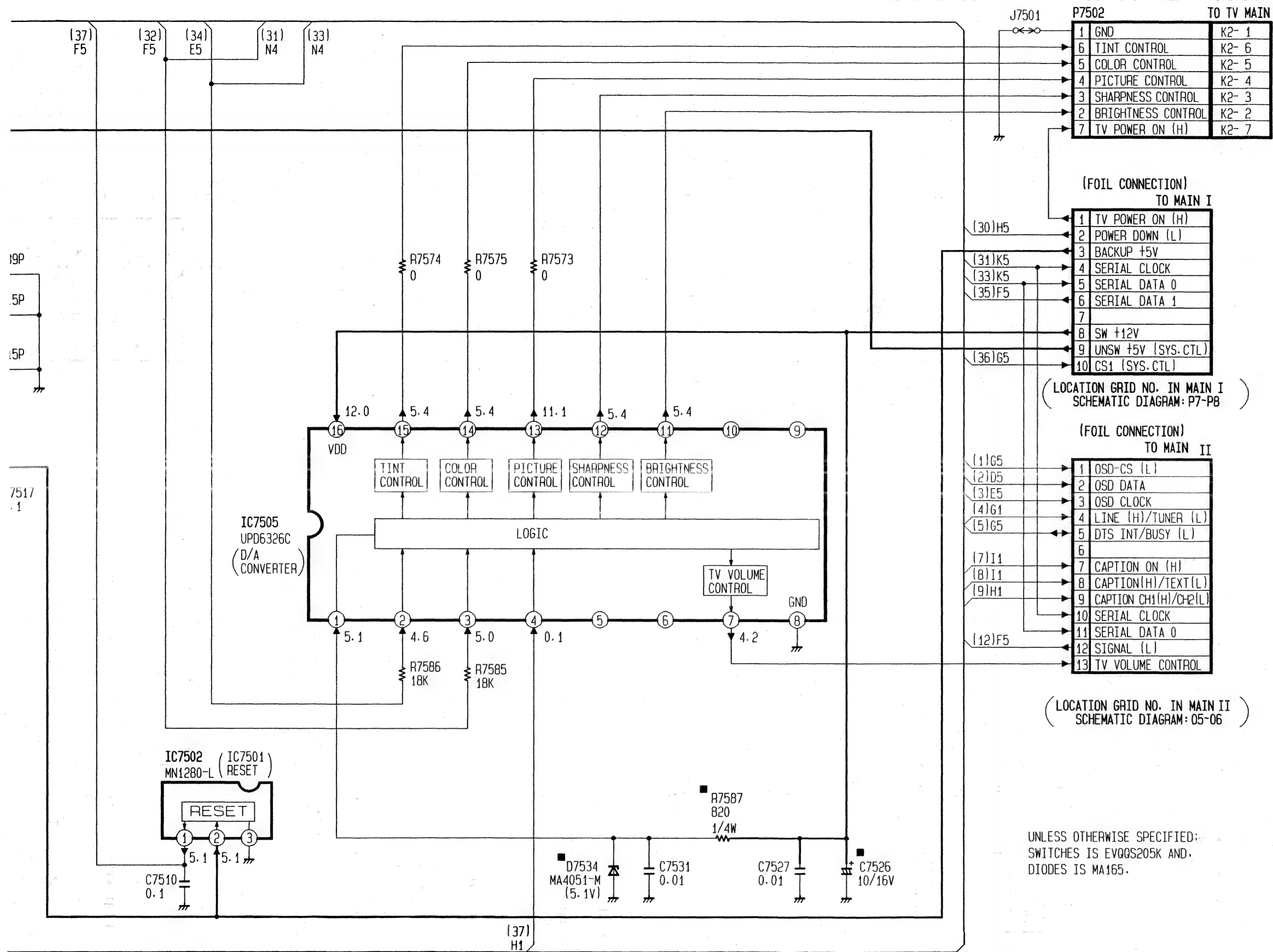


1

TO OPERATION I		P7501
P7551-4	UNSW +5V(SYS. CTL)	4
P7551-16	KEY DATA 7	16
P7551-15	KEY DATA 6	15
P7551-18	KEY DATA 5	18
P7551-17	KEY DATA 4	17
P7551-14	KEY DATA 2	14
P7551-13	SCAN 0	13
P7551-12	SCAN 1	12
P7551-11	SCAN 2	11
P7551-3	IR DATA	3
P7551-5	TIMER LED ON (H)	5
P7551-6		6
P7551-7	REC LED ON (H)	7
P7551-8	LED CATHODE	8
P7551-9	ON-TIMER LED ON (H)	9
P7551-10	REPEAT LED ON (H)	10
P7551-19	GND	19
P7551-1	GND	1
P7551-2	GND	2







MAIN III	
TRANSISTOR	
Q7502	C-4
Q7503	C-4
IC	
IC7501	F-3
IC7502	K-2
IC7503	K-3
CONNECTOR	
P7501	B-3
P7502	O-5
TEST POINT	
TP7503	I-4
TP7504	D-2
TP7505	D-1
TP7506	E-4

IC7501 KEY MATRIX CHART

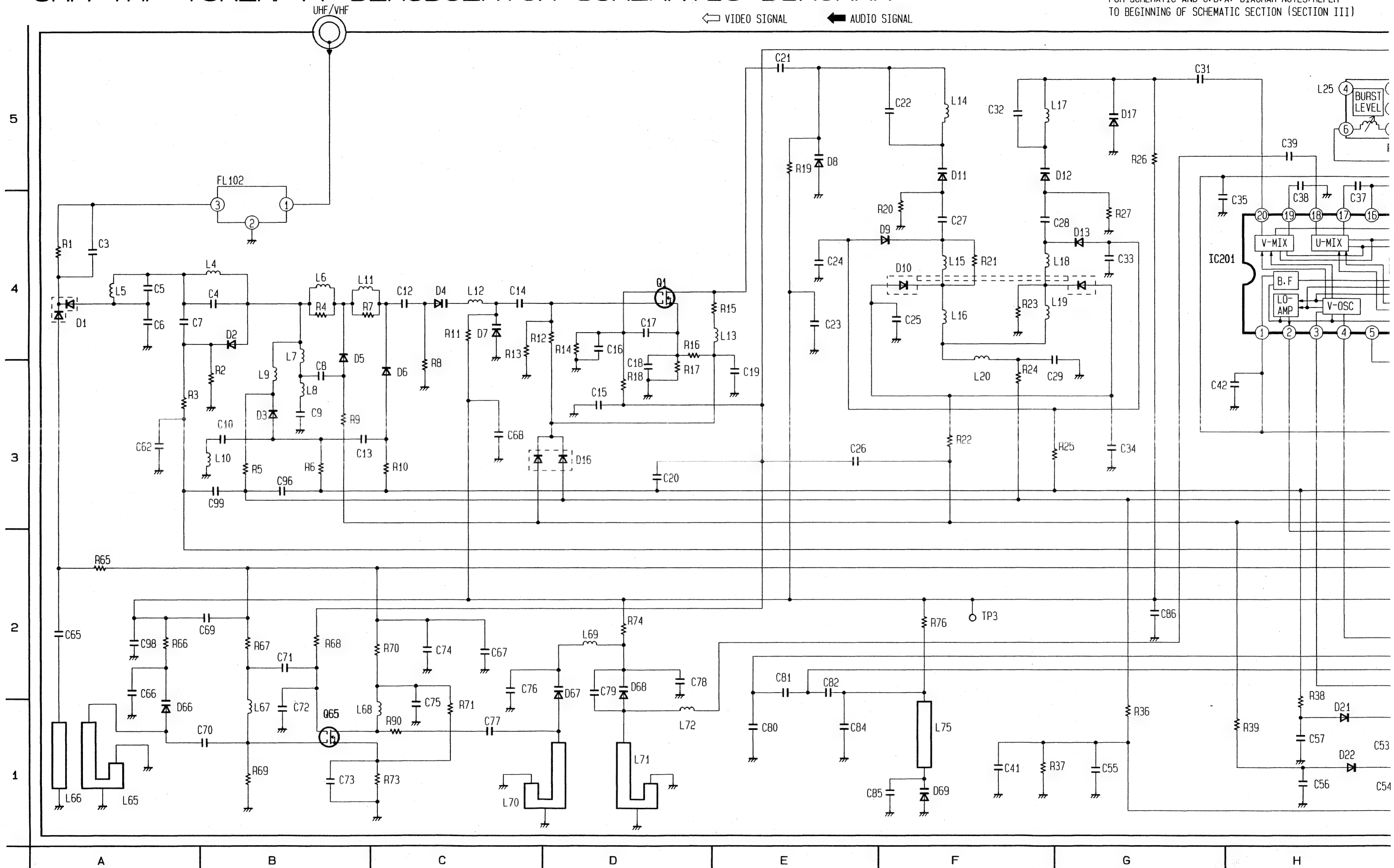
KEY DATA IN	SCAN		
	SCAN 0 (PIN 46)	SCAN 1 (PIN 47)	SCAN 2 (PIN 48)
KEY DATA 2 (PIN 43)	REC	-----	-----
KEY DATA 4 (PIN 41)	FF/CUE	-----	-----
KEY DATA 5 (PIN 40)	REW/REVIEW	PLAY/X2	-----
KEY DATA 6 (PIN 39)	STOP/EJECT	CH DOWN	VOLUME DOWN
KEY DATA 7 (PIN 38)	POWER	CH UP	VOLUME UP

VJBS02223

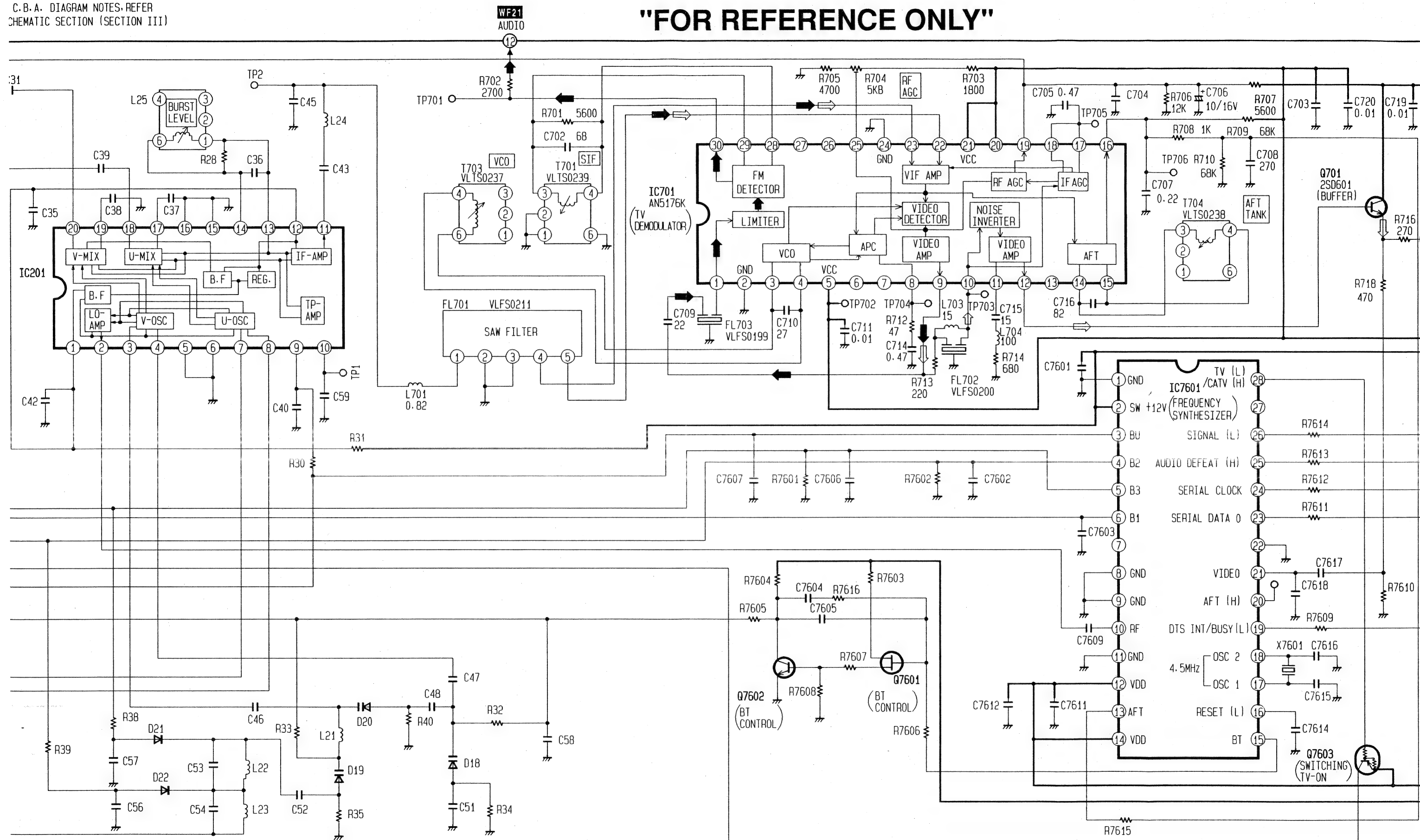
UHF/VHF TUNER/TV DEMODULATOR SCHEMATIC DIAGRAM

NOTE:
FOR SCHEMATIC AND C.B.A. DIAGRAM NOTES, REFER
TO BEGINNING OF SCHEMATIC SECTION (SECTION III)

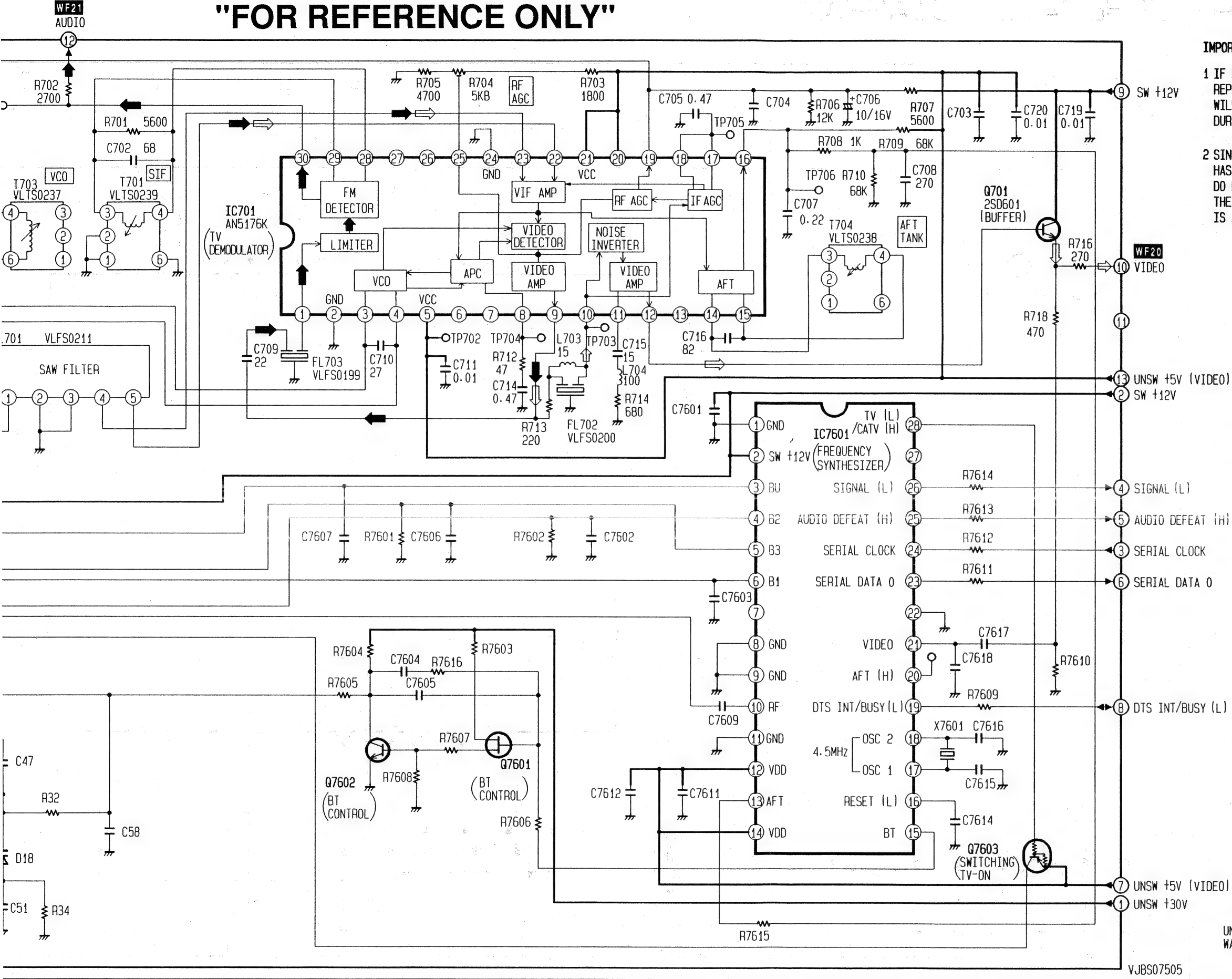
◀ VIDEO SIGNAL ▶ AUDIO SIGNAL



"FOR REFERENCE ONLY"



"FOR REFERENCE ONLY"



IMPORTANT NOTICE:

- 1 IF PARTS OF TUNER AND FS SECTION ARE REPLACED INDIVIDUALLY. THE FCC SPECIFICATIONS WILL NOT BE SATISFIED. DURING SERVICING. PLEASE REPLACE AS A UNIT.
- 2 SINCE THE UHF/VHF TUNER/TV DEMODULATOR UNIT HAS ALREADY BEEN PRE-ADJUSTED AT THE FACTORY. DO NOT TRY TO ADJUST THE UHF/VHF TUNER/TV DEMODULATOR UNIT. THE UHF/VHF TUNER/TV DEMODULATOR UNIT REPLACEMENT PART IS AVAILABLE ONLY AS A COMPLETE ASSEMBLY UNIT.

BAND SELECTION CHART

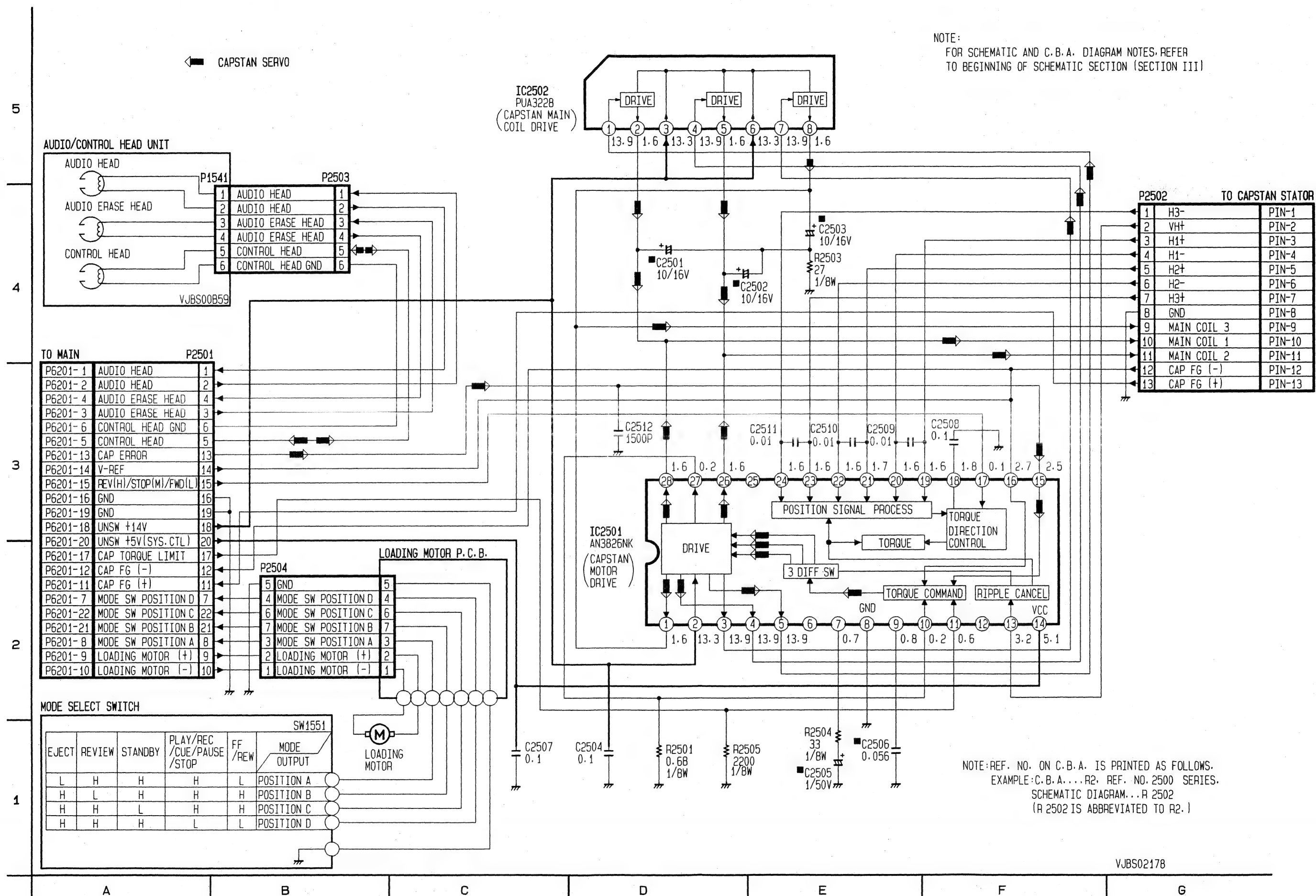
B1	B2	B3	BU	CHANNEL
12V	0V	0V	0V	2CH-6CH 5A,A-5~A-3
6V	12V	0V	0V	7CH-13CH A~1,A-2,A-1
7.5V	11.5V	12V	0V	J~EEE
0V	0V	0V	12V	14CH-69CH 65CH-94CH (CATV) 100CH-125CH (CATV)

NOTE: THE VOLTAGES ARE APPROXIMATE.

UNLESS OTHERWISE SPECIFIED:
WATTAGE OF RESISTORS ARE 1/8W AND 1/16W.

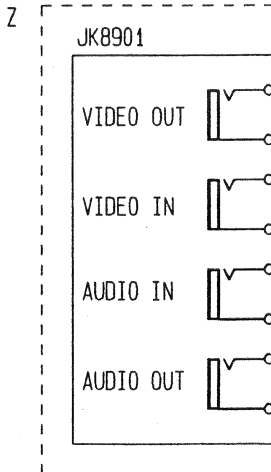
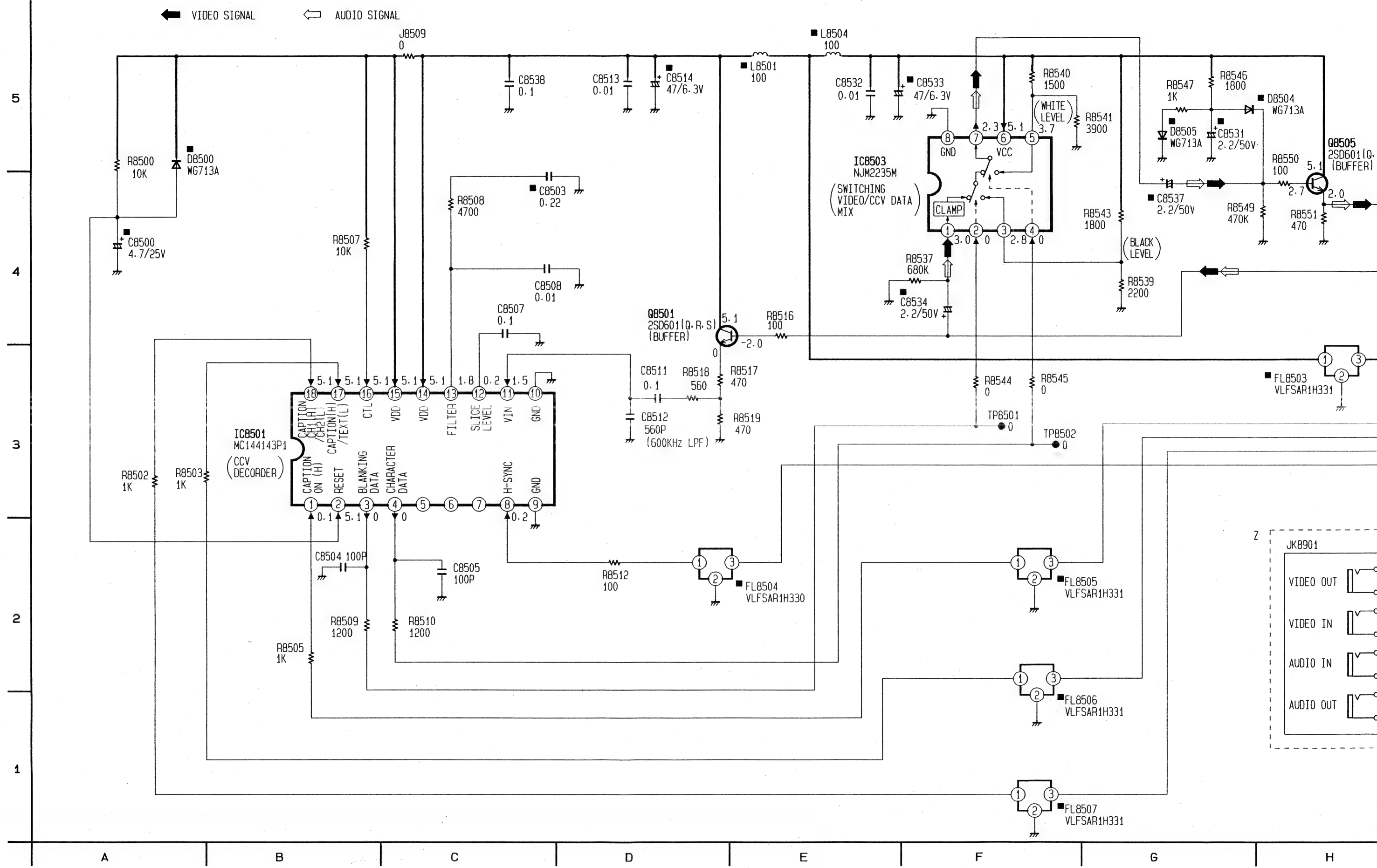
VJBS07505

CAPSTAN MOTOR DRIVE SCHEMATIC DIAGRAM



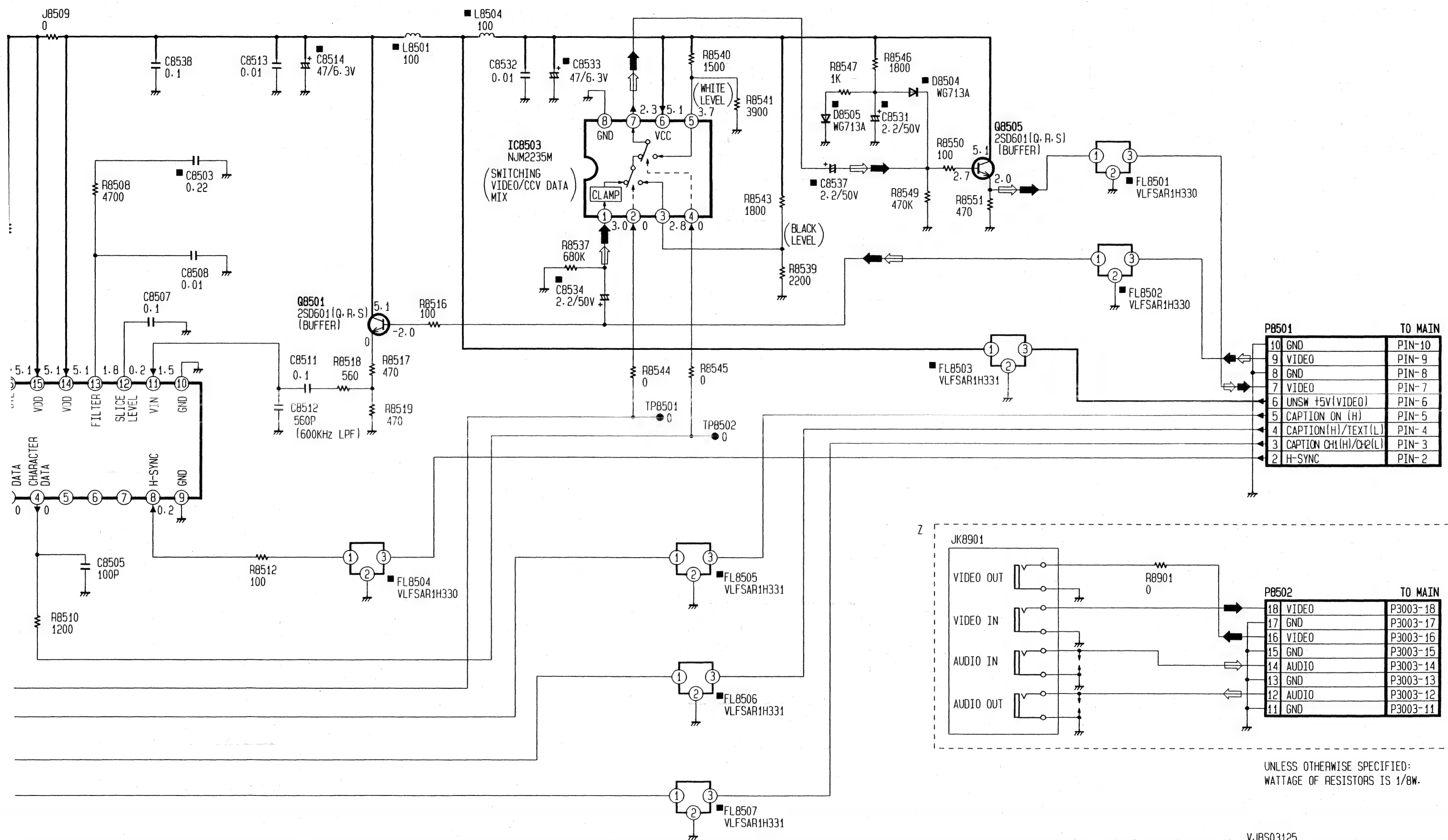
CCV SCHEMATIC DIAGRAM

- STATOR
- 1
 - 2
 - 3
 - 4
 - 5
 - 6
 - 7
 - 8
 - 9
 - 10
 - 11
 - 12
 - 13



3RAM

SIGNAL

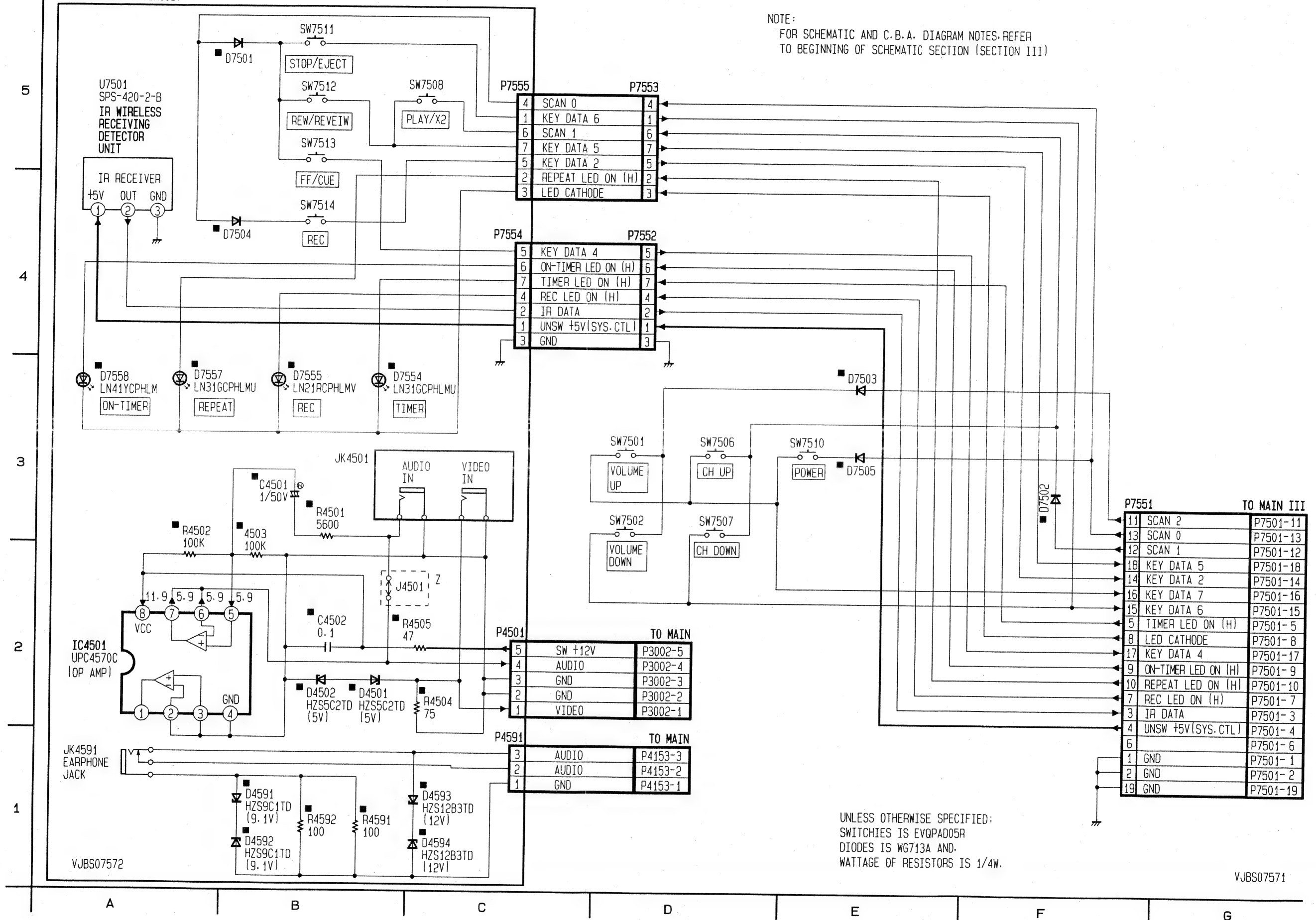


VJBS03125

OPERATION I/II SCHEMATIC DIAGRAM (A, B, C, D)

OPERATION II CIRCUIT

NOTE:
FOR SCHEMATIC AND C.B.A. DIAGRAM NOTES REFER
TO BEGINNING OF SCHEMATIC SECTION (SECTION III)

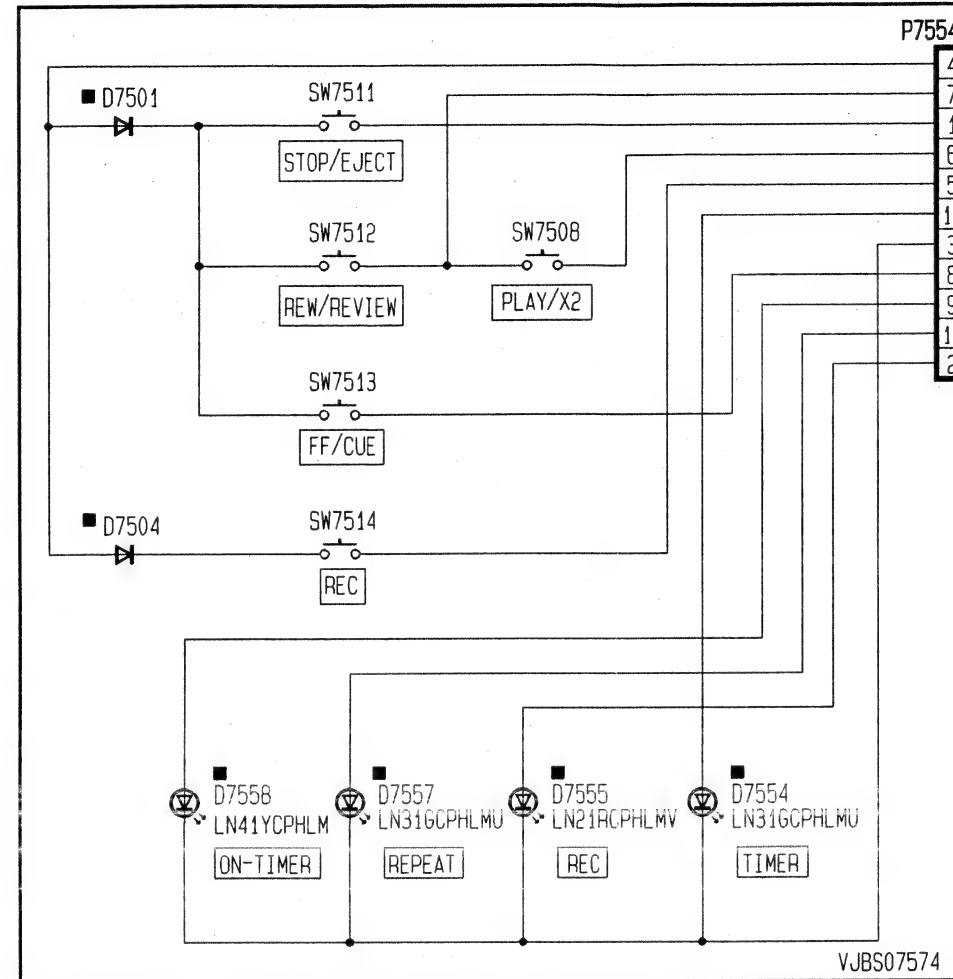


UNLESS OTHERWISE SPECIFIED:
SWITCHES IS EVQPAD05R
DIODES IS WG713A AND
WATTAGE OF RESISTORS IS 1/4W.

VJBS07571

OPERATION I/II SCHEMATIC DIAGRAM (E, F, G, H)

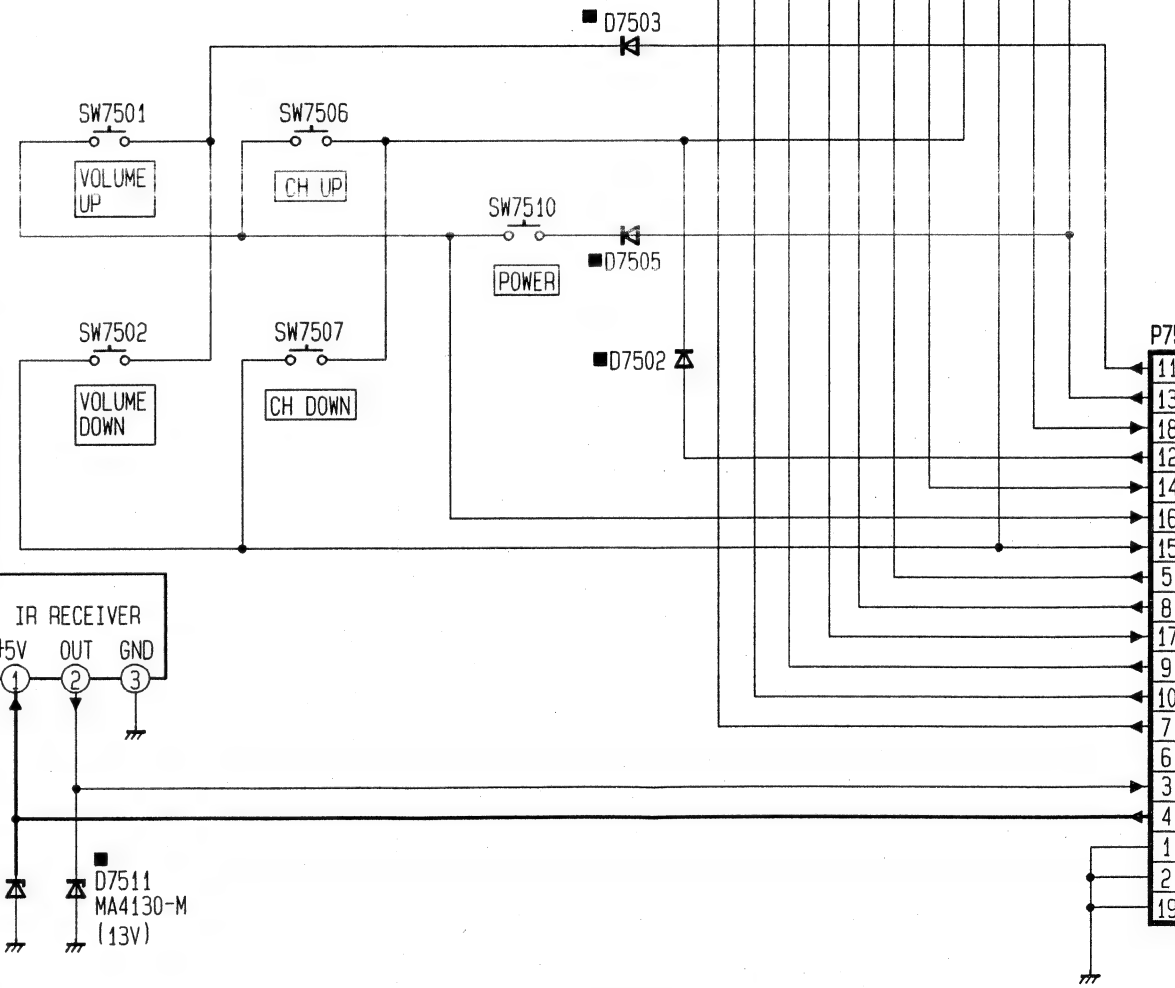
OPERATION II CIRCUIT



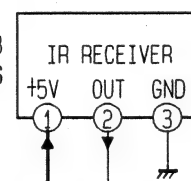
P7554

4	SCAN 0
7	KEY DATA 5
1	KEY DATA 6
6	SCAN 1
5	KEY DATA 2
11	TIMER LED ON (H)
3	LED CATHODE
8	KEY DATA 4
9	ON-TIMER LED ON (H)
10	REPEAT LED ON (H)
2	REC LED ON (H)

P7552



U7501
SPS-420-2-B
IR WIRELESS
RECEIVING
DETECTOR
UNIT



D7510
MA4130-M
(13V)

D7511
MA4130-M
(13V)

UNLESS OTHERWISE SPECIFIED:
SWITCHES IS EVOPAD05R AND
DIODE IS W6713A.

TO MAIN III

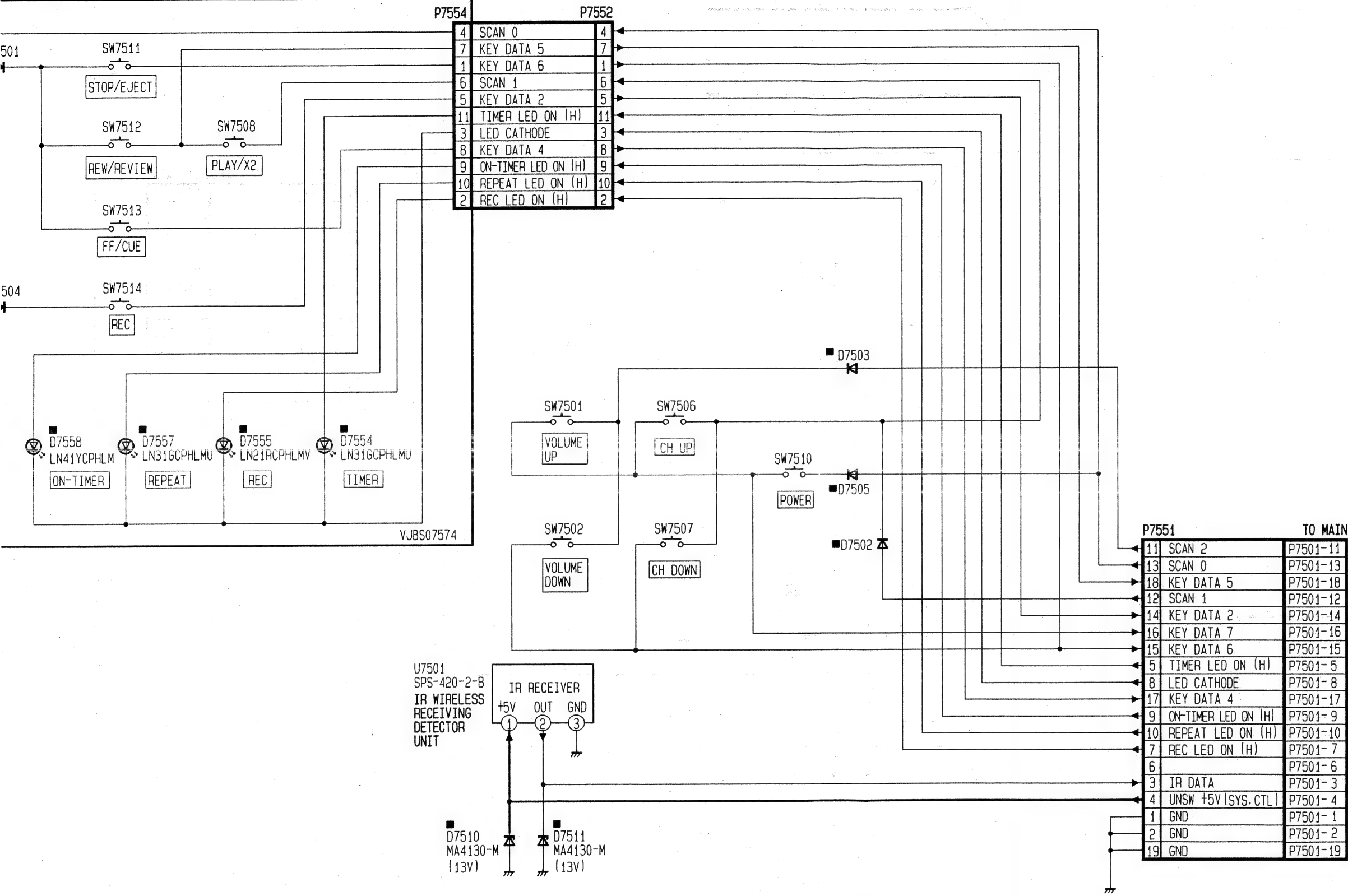
	P7501-11
	P7501-13
	P7501-12
5	P7501-18
2	P7501-14
7	P7501-16
6	P7501-15
D ON (H)	P7501-5
ODE	P7501-8
4	P7501-17
LED ON (H)	P7501-9
ED ON (H)	P7501-10
ON (H)	P7501-7
	P7501-3
(SYS. CTL)	P7501-4
	P7501-6
	P7501-1
	P7501-2
	P7501-19

VJBS07571

G

ATION I/II SCHEMATIC DIAGRAM (E, F, G, H)

II CIRCUIT



COMPARISON CHART
OF MODELS & MARKS

MODEL	MARK
PV-M1324	A
PV-M1324W	B
VV134	C
VV134W	D
PV-M2024	E
VV204	F
VV204W	G
PV-M2044	H
NOT USED	Z

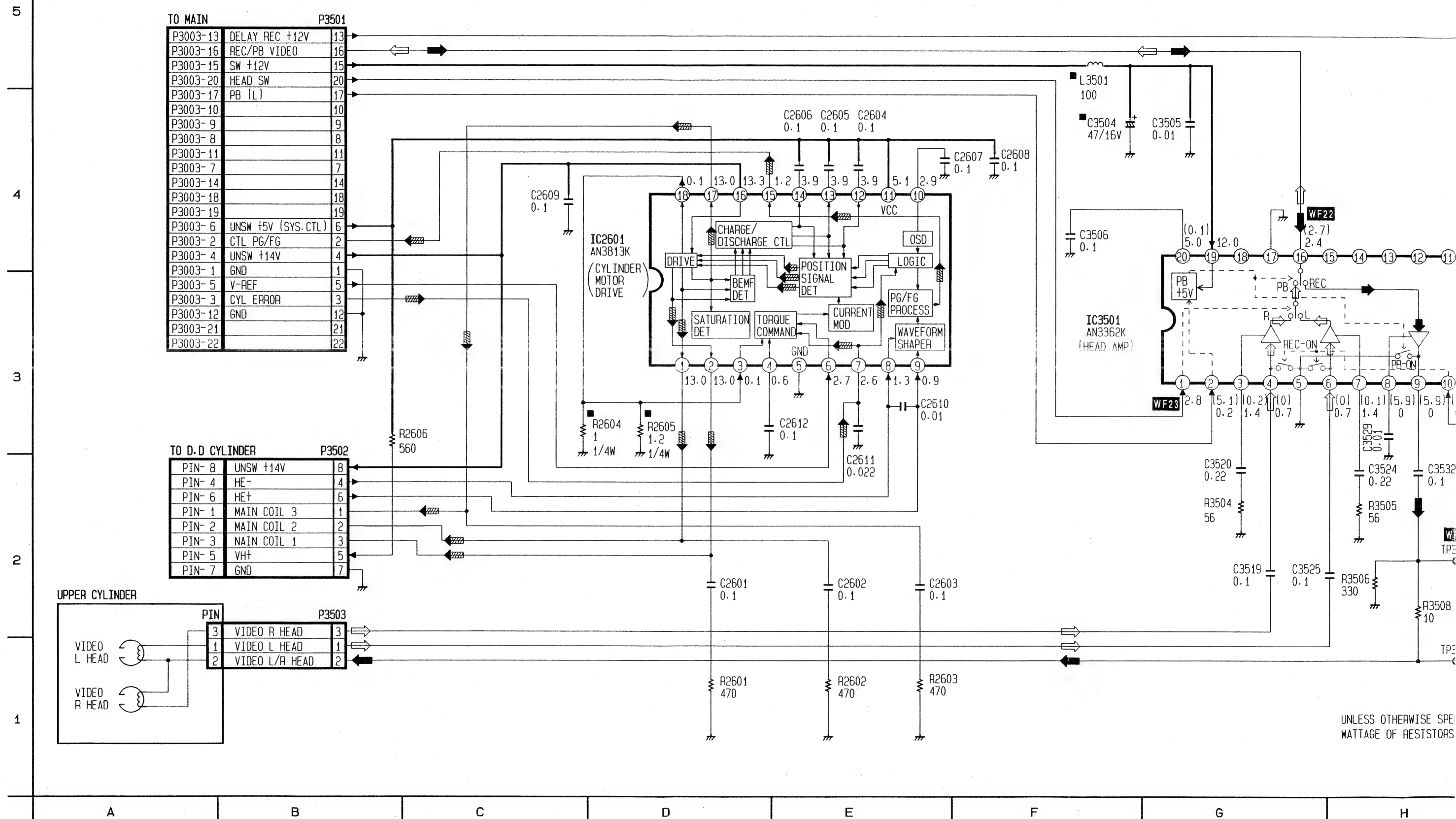
UNLESS OTHERWISE SPECIFIED:
SWITCHES IS EVOPAD05R AND
DIODE IS W6713A.

VJBS07573

HEAD AMP SCHEMATIC DIAGRAM (A, B, C, D, E, F, G)

← REC VIDEO SIGNAL ← PB VIDEO SIGNAL ← CYLINDER SERVO

NOTE:
FOR SCHEMATIC AND C.B.A. DIAGRAM NOTES, REFER
TO BEGINNING OF SCHEMATIC SECTION (SECTION III)

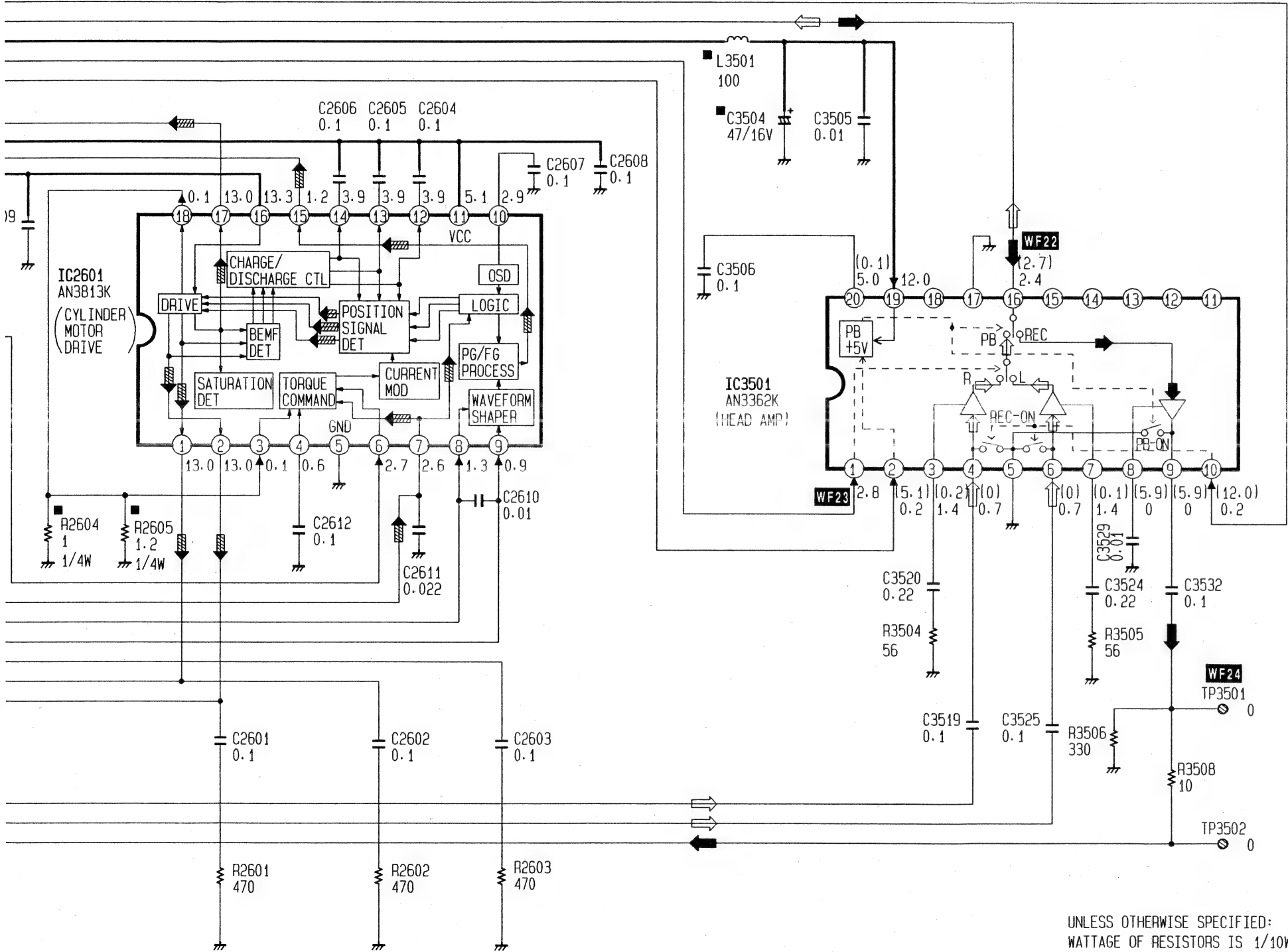


UNLESS OTHERWISE SPECIFIED
WATTAGE OF RESISTORS

1 (A, B, C, D, E, F, G)

3 SERVO

NOTE:
FOR SCHEMATIC AND C.B.A. DIAGRAM NOTES, REFER
TO BEGINNING OF SCHEMATIC SECTION (SECTION III)



COMPARISON CHART
OF MODELS & MARKS

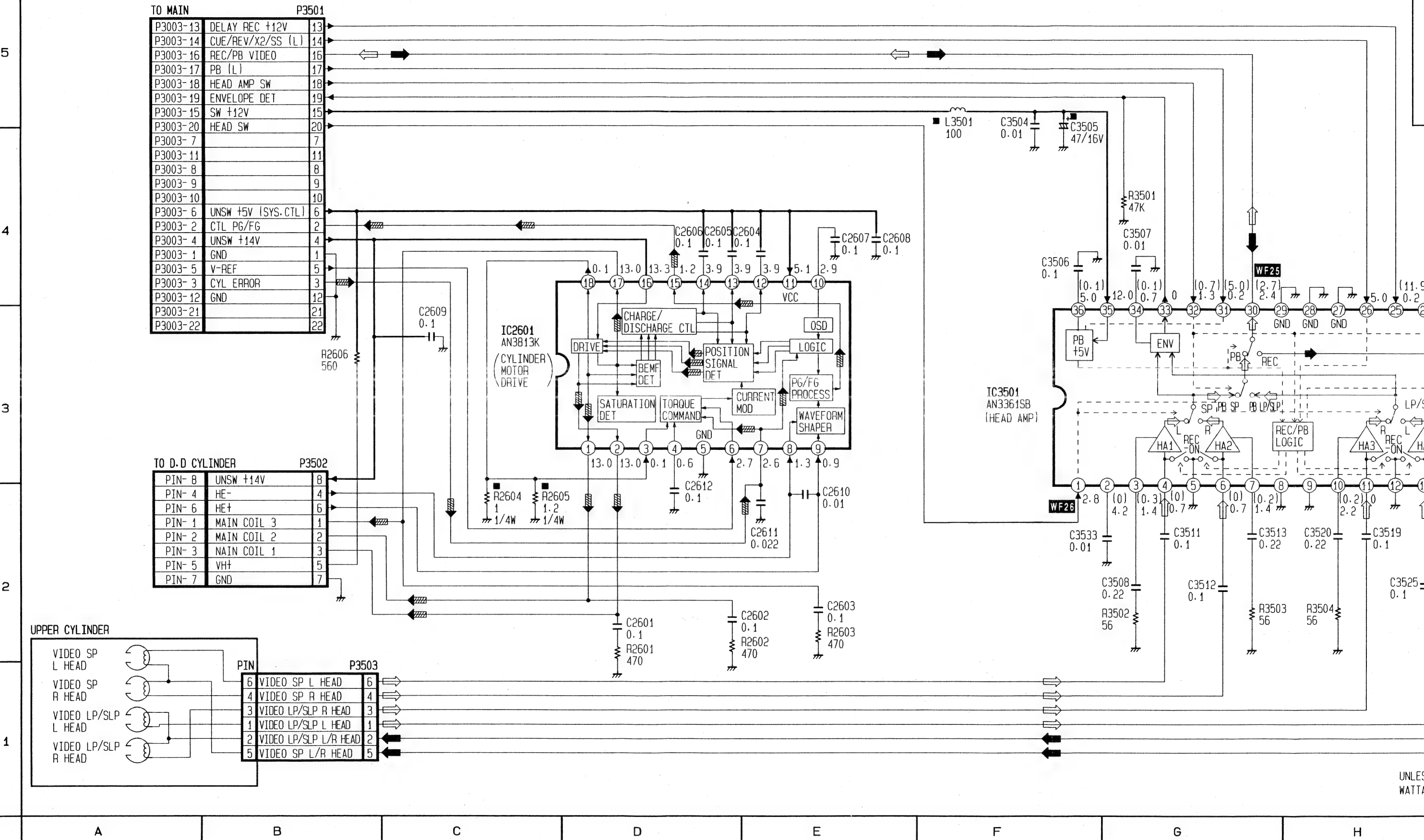
MODEL	MARK
PV-M1324	A
PV-M1324W	B
VV134	C
VV134W	D
PV-M2024	E
VV204	F
VV204W	G
PV-M2044	H
NOT USED	Z

HEAD AMP	
IC	
IC2601	D-4
IC3501	F-3
CONNECTOR	
P3501	B-5
P3502	B-3
P3503	B-2
TEST POINT	
TP3501	H-2
TP3502	H-1

VJBS0563

HEAD AMP SCHEMATIC DIAGRAM (H)

NOTE:
FOR SCHEMATIC AND C.B.A. DIAGRAM NOTES, REFER
TO BEGINNING OF SCHEMATIC SECTION (SECTION III)



(H)

← PB VIDEO SIGNAL

← CYLINDER SERVO

NOTE:
FOR SCHEMATIC AND C.B.A. DIAGRAM NOTES, REFER
TO BEGINNING OF SCHEMATIC SECTION (SECTION III)

COMPARISON CHART
OF MODELS & MARKS

MODEL	MARK
PV-M1324	A
PV-M1324W	B
VV134	C
VV134W	D
PV-M2024	E
VV204	F
VV204W	G
PV-M2044	H
NOT USED	Z

HEAD AMP

IC	
IC2601	C-3
IC3501	F-3
CONNECTOR	
P3501	B-5
P3502	B-3
P3503	B-2
TEST POINT	
TP3501	I-2
TP3502	I-2

TV MAIN

TRANSISTOR	
Q006	L-1
Q309	G-1
Q310	H-1
Q501	J-1
Q505	J-5
Q506	J-5
Q507	I-5
Q510	A-2
Q551	K-2
IC	
IC301	E-3
IC451	C-4
CONNECTOR	
K1	A-3
K2	A-5
K3	A-3
K6	A-4
K7	A-4
A1	M-5
A2	M-5
A3	M-5
A4	M-5
A5	M-5
A6	M-5
A8	M-5
A11	M-5
A13	I-3
A14	L-2
A15	P-3
A16	P-3

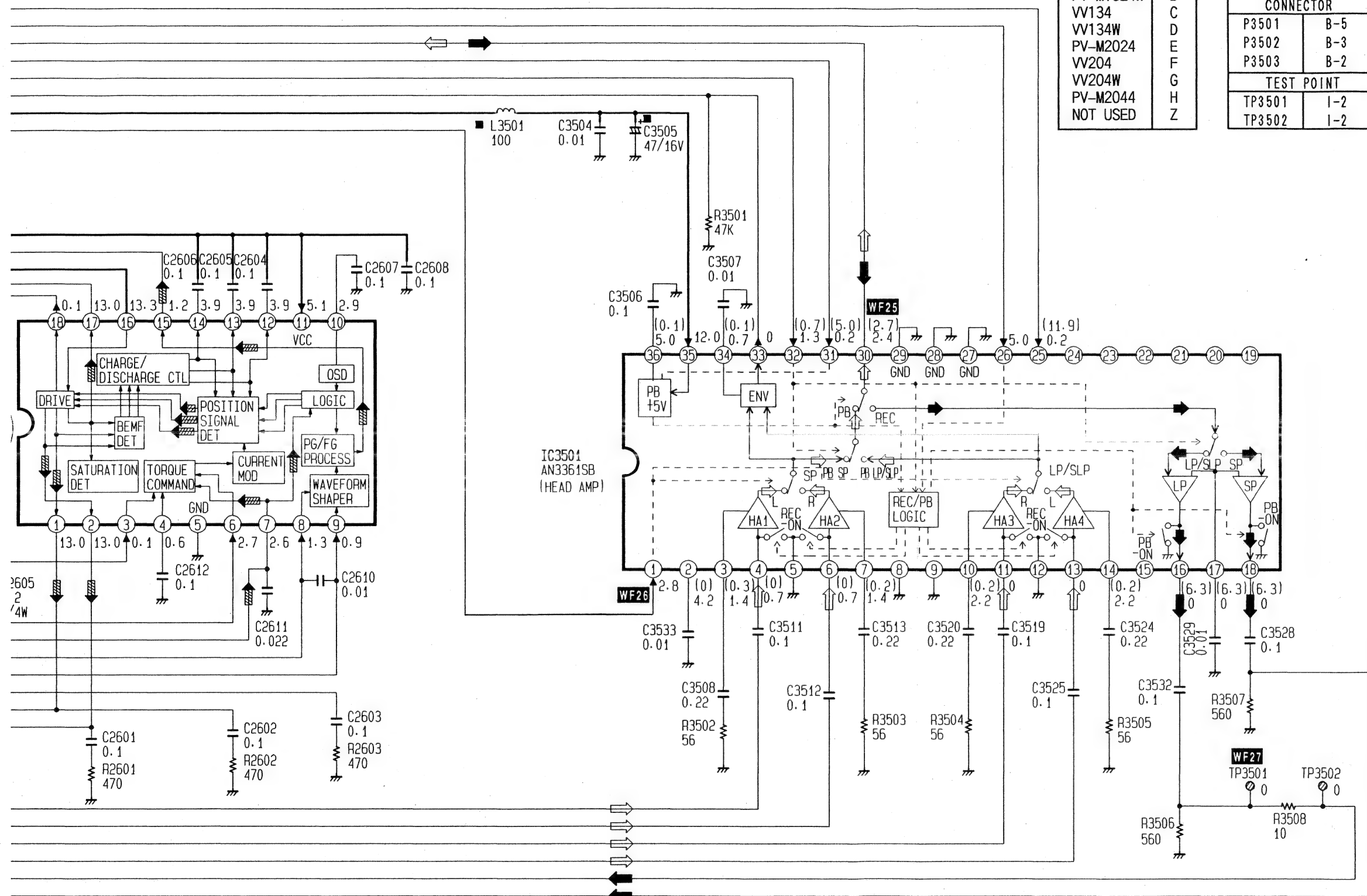
TV MAIN

TEST POINT	
TP12	E-1
※TP12	E-1
TP13	I-2
※TP13	I-2
TP46B	G-1
※TP46B	G-2
TP51	K-5
※TP51	I-3
TP52	K-5
※TP52	K-5
TPA7	I-5
※TPA7	I-5
TPA8	I-4
※TPA8	I-4
TPA9	I-4
※TPA9	I-4
TPD1	K-3
TPD2	K-3
TPD6	K-3
※TPD6	K-3
ADJUSTMENT	
R324	C-4
R325	F-1
R410	C-1
R622	E-5

※ : COMPONENT SIDE

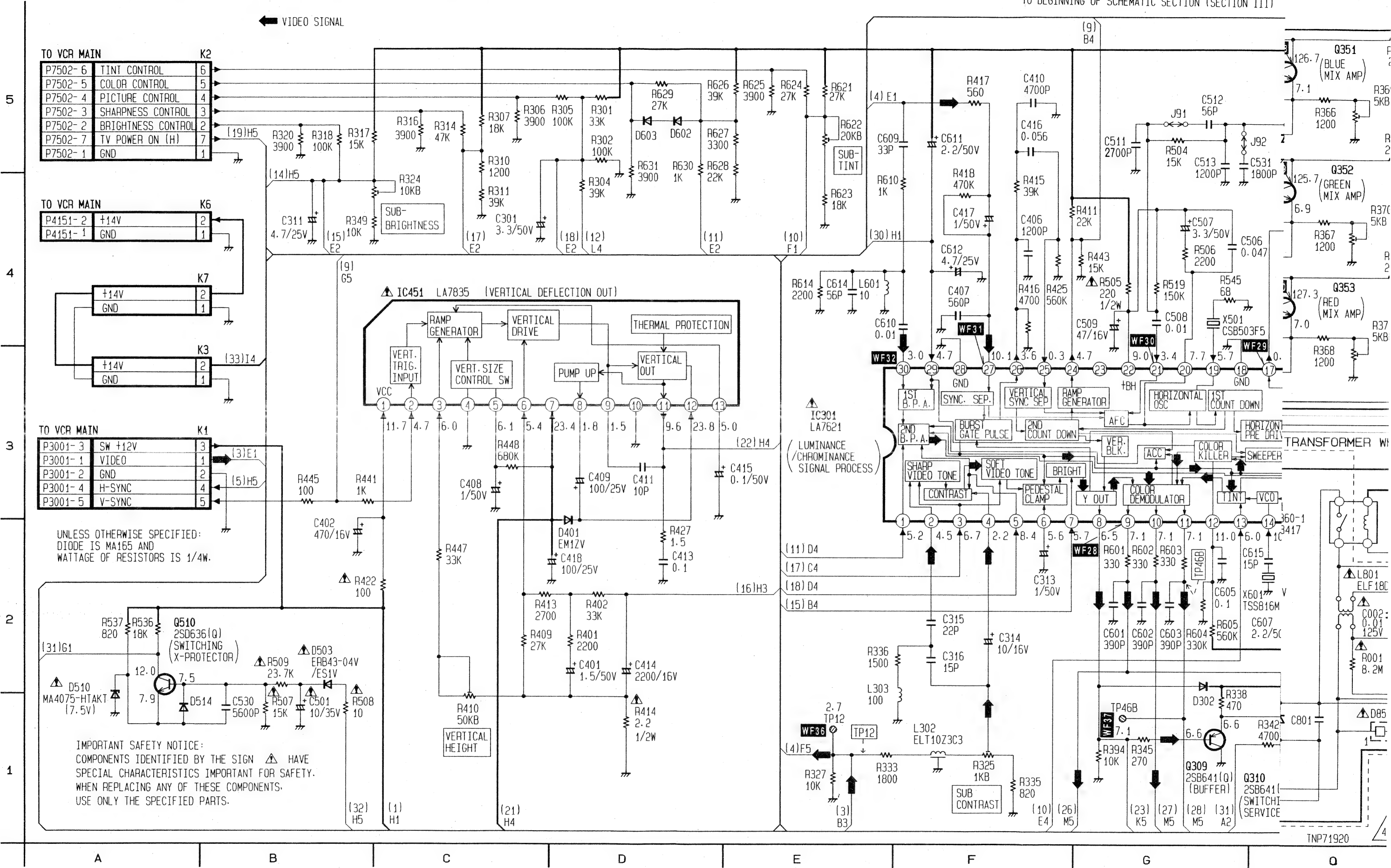
CRT

TRANSISTOR	
Q351	O-5
Q352	O-5
Q353	O-4
CONNECTOR	
C1	M-5
C2	M-5
C3	M-5
C4	M-5
C5	M-5
C6	M-5
C8	M-5
C10	M-5
C11	M-5
C12	Q-5
TEST POINT	
TP47E	P-4
TP48	N-5
TP50	M-4
ADJUSTMENT	
R363	N-5
R365	N-4
R369	O-5
R370	O-4
R371	O-4



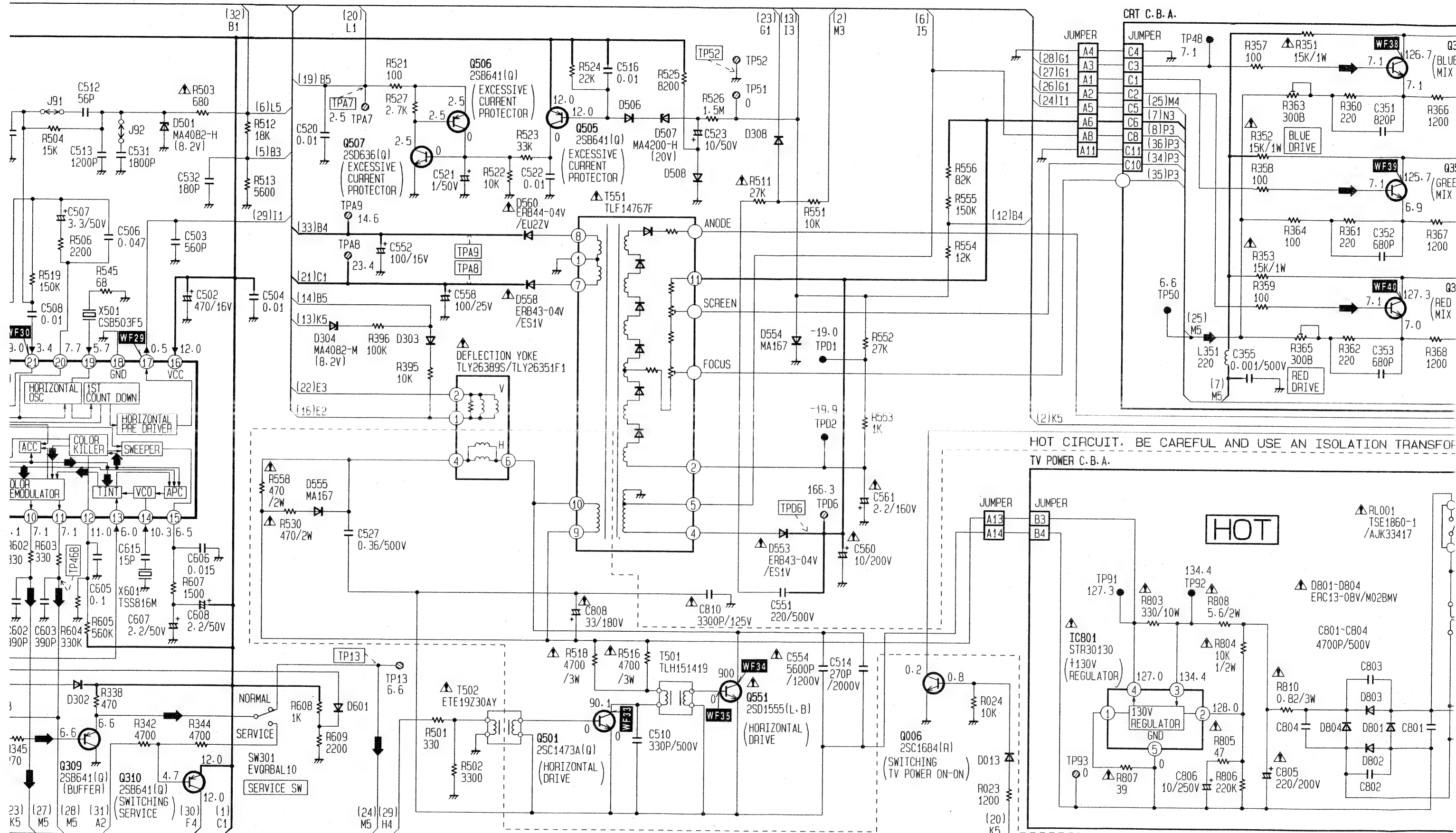
TV MAIN/TV POWER/CRT SCHEMATIC DIAGRAM (A. B. C. D)

NOTE:
FOR SCHEMATIC AND C.B.A. DIAGRAM NOTES REFER
TO BEGINNING OF SCHEMATIC SECTION (SECTION III)

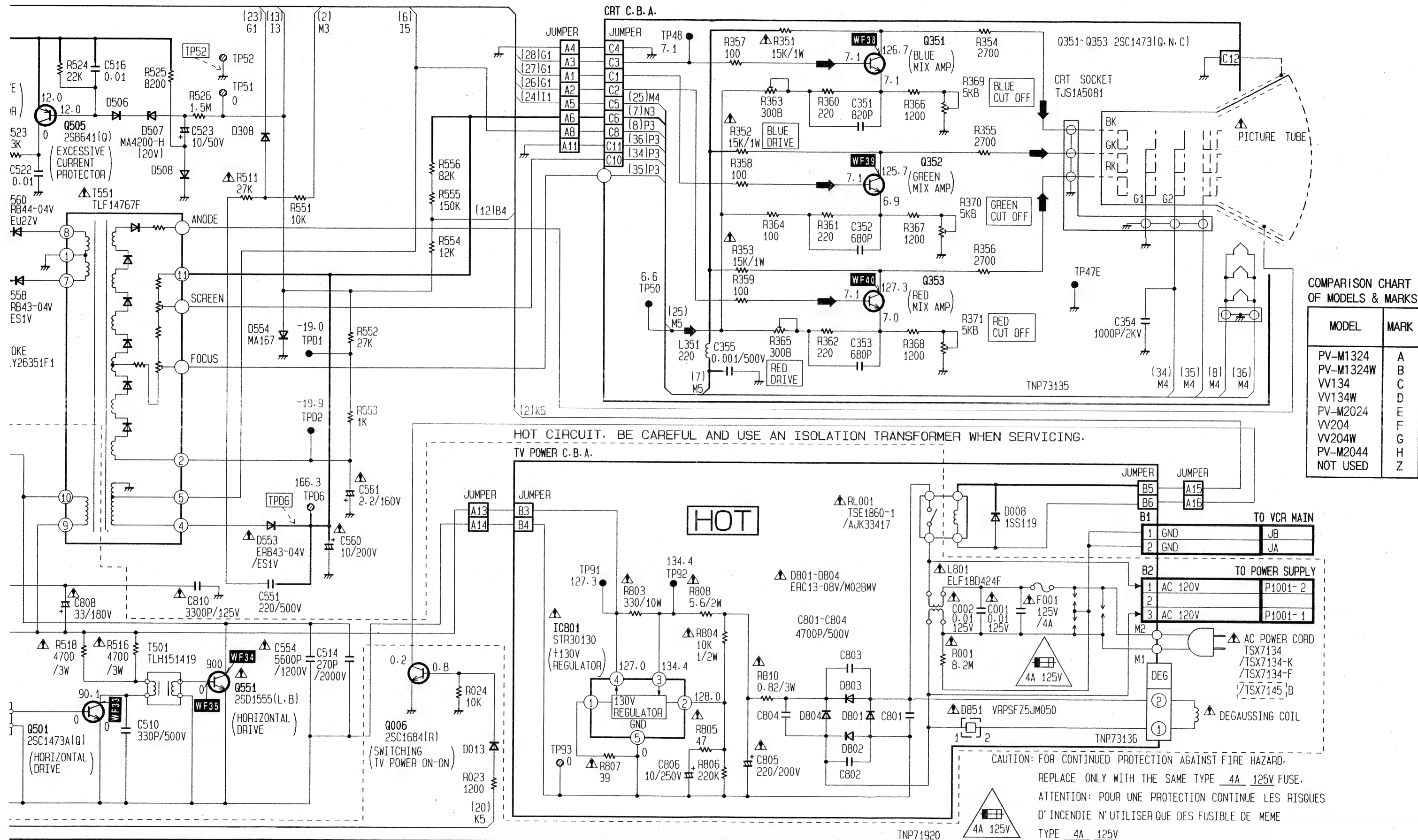


1. A. DIAGRAM NOTES. REFER
 IATC SECTION (SECTION III)

NOTE:
 ALL PARTS ON TV MAIN, TV POWER AND CRT C.B.A. HAVE LEADS.



AND CRT C.B.A. HAVE LEADS.



NOTE:
FOR SCHEMATIC AND C.B.A. DIAGRAM NOTES, REFER
TO BEGINNING OF SCHEMATIC SECTION (SECTION III)

TO VCR MAIN

P7502-6	TINT CONTROL	6
P7502-5	COLOR CONTROL	5
P7502-4	PICTURE CONTROL	4
P7502-3	SHARPNESS CONTROL	3
P7502-2	BRIGHTNESS CONTROL	2
P7502-7	TV POWER ON (H)	7
P7502-1	GND	1


TO VCR MAIN

P4151-2	+17V	2
P4151-1	GND	1

TO VCR MAIN

P3001- 3	SW +12V	3
P3001- 1	VIDEO	1
P3001- 2	GND	2
P3001- 4	H-SYNC	4
P3001- 5	V-SYNC	5

UNLESS OTHERWISE SPECIFIED:
DIODE IS MA165 AND
WATTAGE OF RESISTORS IS 1/4W.

IMPORTANT SAFETY NOTICE:
COMPONENTS IDENTIFIED BY THE SIGN  HAVE
SPECIAL CHARACTERISTICS IMPORTANT FOR SAFETY.
WHEN REPLACING ANY OF THESE COMPONENTS,
USE ONLY THE SPECIFIED PARTS.

← VIDEO SIGNAL

▲ IC451 LA7835/LA7835-TA (VERTICAL DEFLECTION OUT)

IC301
LA762

(LUMINANCE
/CHROMINANCE
SIGNAL)

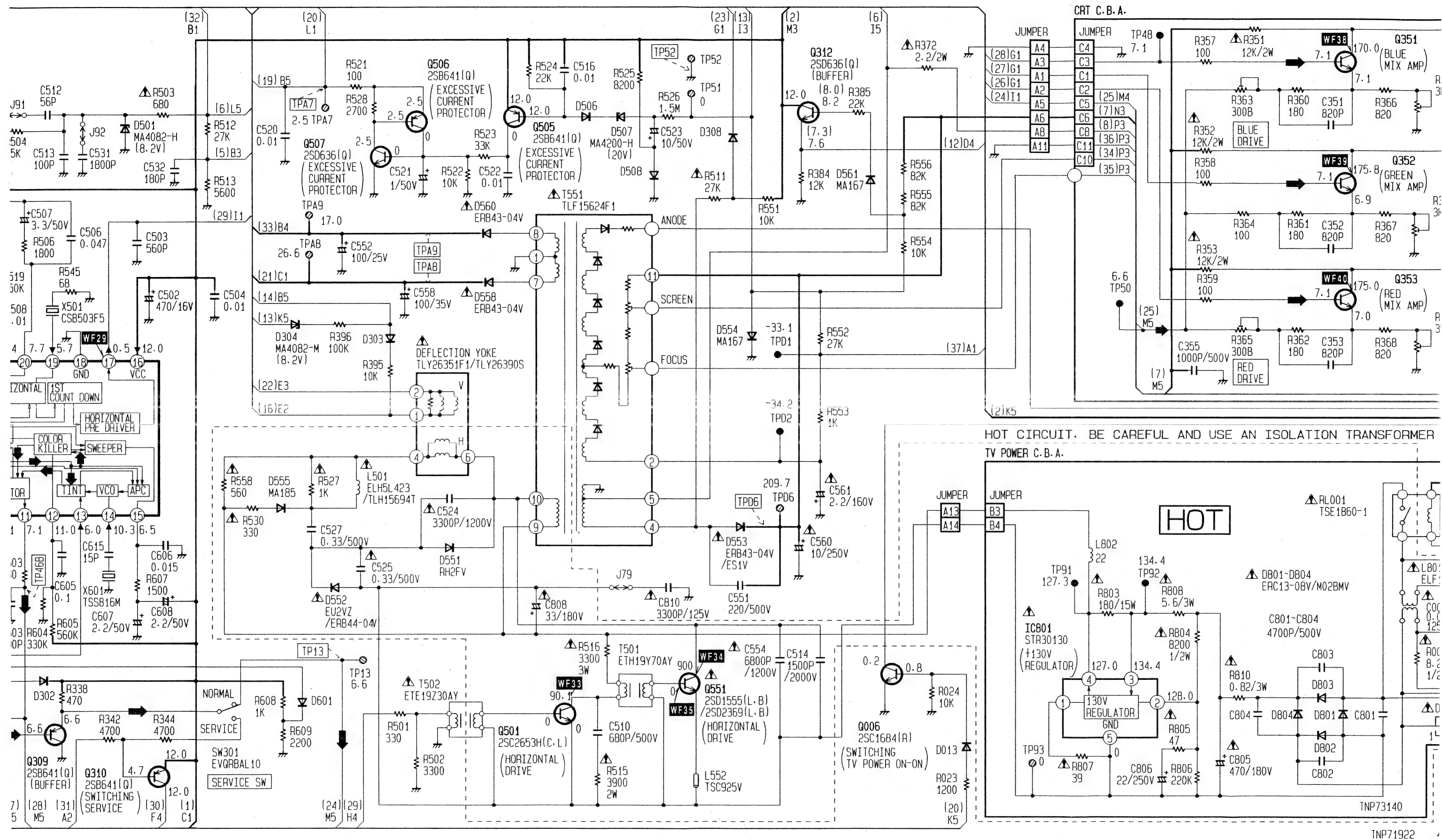
NORMAL
SERVICE

SW301
EVGRBAL10

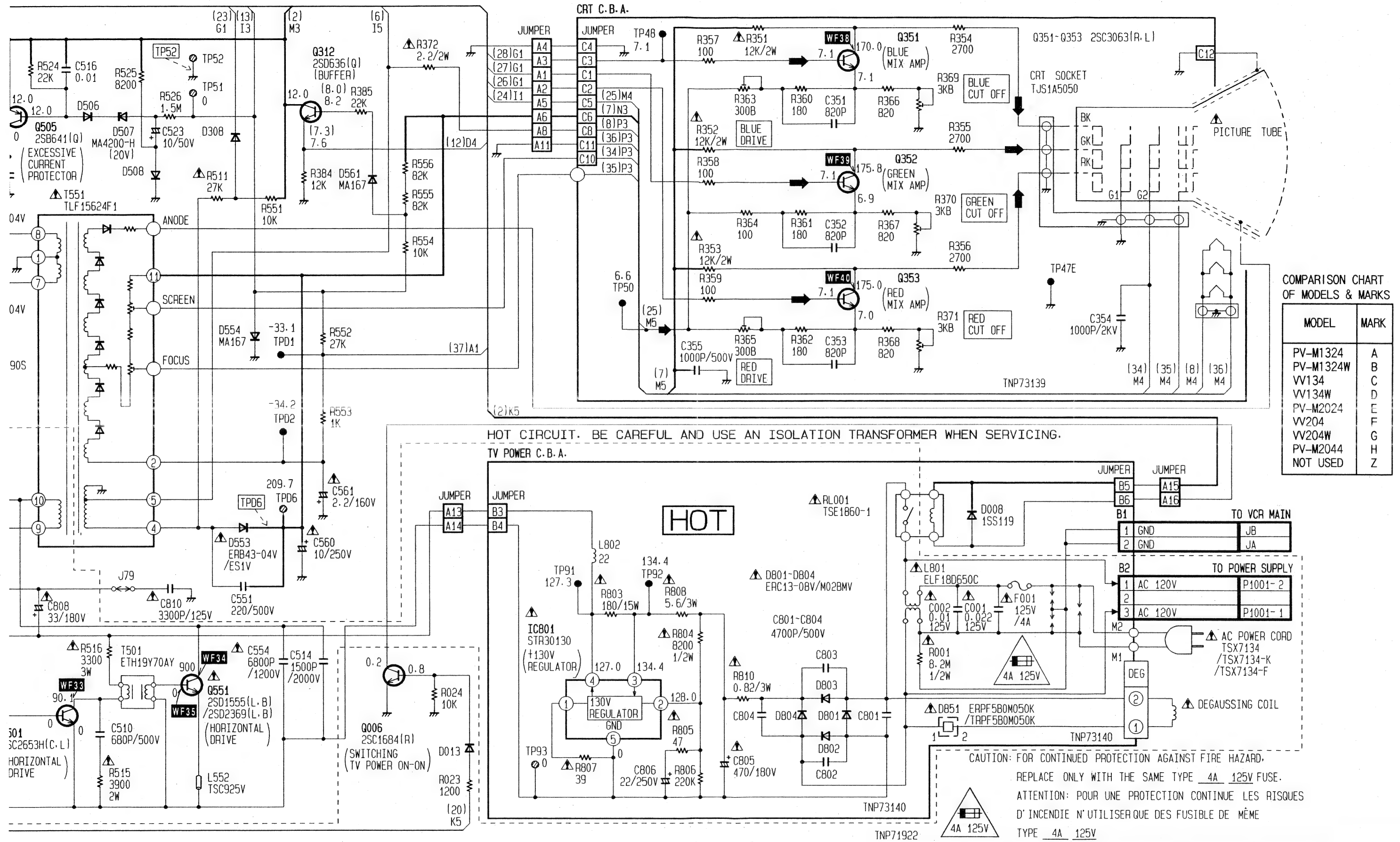
SERVICE SW

ITES. REFER
SECTION III)

NOTE:
ALL PARTS ON TV MAIN, TV POWER AND CRT C.B.A. HAVE LEADS.



A. HAVE LEADS.



MODE SELECT SWITCH VSSS0129

LOADING MOTOR P.C.B.

LOADING MOTOR

CAPSTAN MOTOR DRIVE C.B.A. VEPS02178A1

CAPSTAN STATOR UNIT VEMS0237

AUDIO/CONTROL HEAD UNIT VEHS0500

CYLINDER UNIT

UPPER CYLINDER UNIT

HEAD AMP ASS'Y

MAIN (POWER SUPPLY/CYLINDER DRIVE/SIGNAL PROCESSOR)

SPEAKER USP65306 EASG9D540A2 A,B,C,D E,F,G,H

SAFETY TAB SW UNIT VEKS4798

FULL ERASE HEAD C.B.A. UNIT VEPS0482A1 VJBS0482

POWER SUPPLY ASS'Y VEPS01039A1

CCV C.B.A. VEPS03125C2

UHF/VHF TUNER/TV DEMODULATOR UNIT VEQS0562

VJBS00B59

VJBS02178

VJBS02178A1

VJBS0563

VJBS0564

VJBS07505

VJBS01039

VJBS03125

PIN

P3502

P3501

P2601

P2504

P2502

P2501

P6201

P1541

P2503

P3002

P8501

P1001

P1002

VIDEO OUT

AUDIO OUT


H

DEGAL COIL

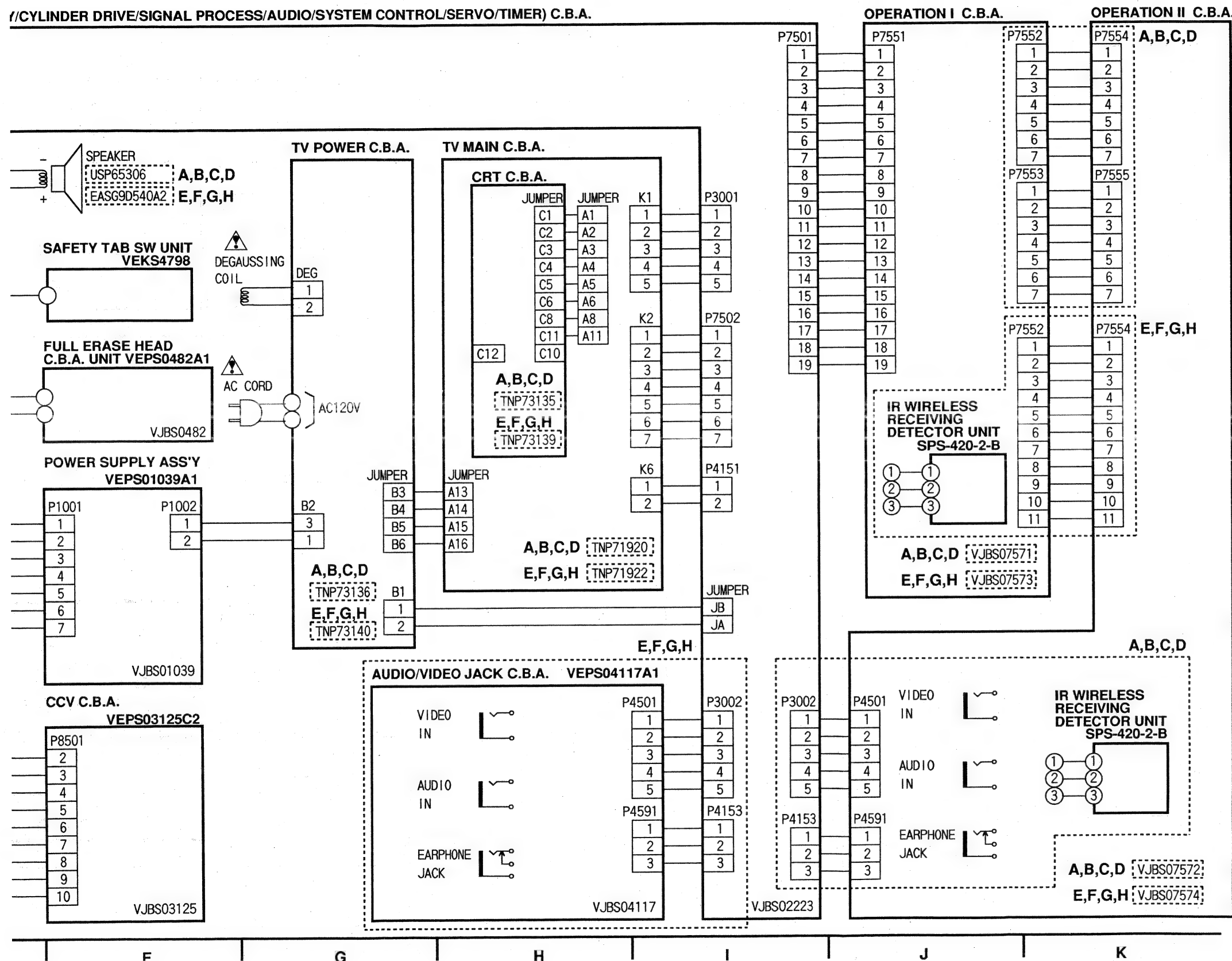
AC

3-50

OR SCHEMATIC AND C.B.A. DIAGRAM NOTES, REFER
) BEGINNING OF SCHEMATIC SECTION (SECTION III)

IMPORTANT SAFETY NOTICE:
 COMPONENTS IDENTIFIED BY THE SIGN  HAVE
 SPECIAL CHARACTERISTICS IMPORTANT FOR SAFETY.
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 ONLY THE SPECIFIED PARTS.

//CYLINDER DRIVE/SIGNAL PROCESS/AUDIO/SYSTEM CONTROL/SERVO/TIMER) C.B.A.



COMPARISON CHART
 OF MODELS & MARKS

MODEL	MARK
PV-M1324	A
PV-M1324W	B
VV134	C
VV134W	D
PV-M2024	E
VV204	F
VV204W	G
PV-M2044	H
NOT USED	Z

C.B.A./UNIT NUMBER CHART

MAIN C.B.A.	
C.B.A. NUMBER	MODEL NUMBER MARK
VEPS02223A1	A, B, C, D
VEPS02223B1	E, F, G
VEPS02223C1	H

OPERATION I C.B.A.	
C.B.A. NUMBER	MODEL NUMBER MARK
VEPS07571A1	A, B, C, D
VEPS07573A1	E, F, G, H

OPERATION II C.B.A.	
C.B.A. NUMBER	MODEL NUMBER MARK
VEPS07572A1	A, B, C, D
VEPS07574A1	E, F, G, H

HEAD AMP ASS'Y	
ASS'Y NUMBER	MODEL NUMBER MARK
VEPS0563CA1	A, B, C, D, E, F, G
VEPS0564CA1	H

TV MAIN C.B.A.	
C.B.A. NUMBER	MODEL NUMBER MARK
TNP71920CC	A, B, C, D
TNP71922CC	E, F, G, H

TV POWER C.B.A.	
C.B.A. NUMBER	MODEL NUMBER MARK
TNP73136BB	A, B, C, D
TNP73140BB	E, F, G, H

CRT C.B.A.	
C.B.A. NUMBER	MODEL NUMBER MARK
TNP73135AA	A, B, C, D
TNP73139AA	E, F, G, H


CYLINDER UNIT	
UNIT NUMBER	MODEL NUMBER MARK
VEGS0370	A, B, C, D, E, F, G
VEGS0372	H

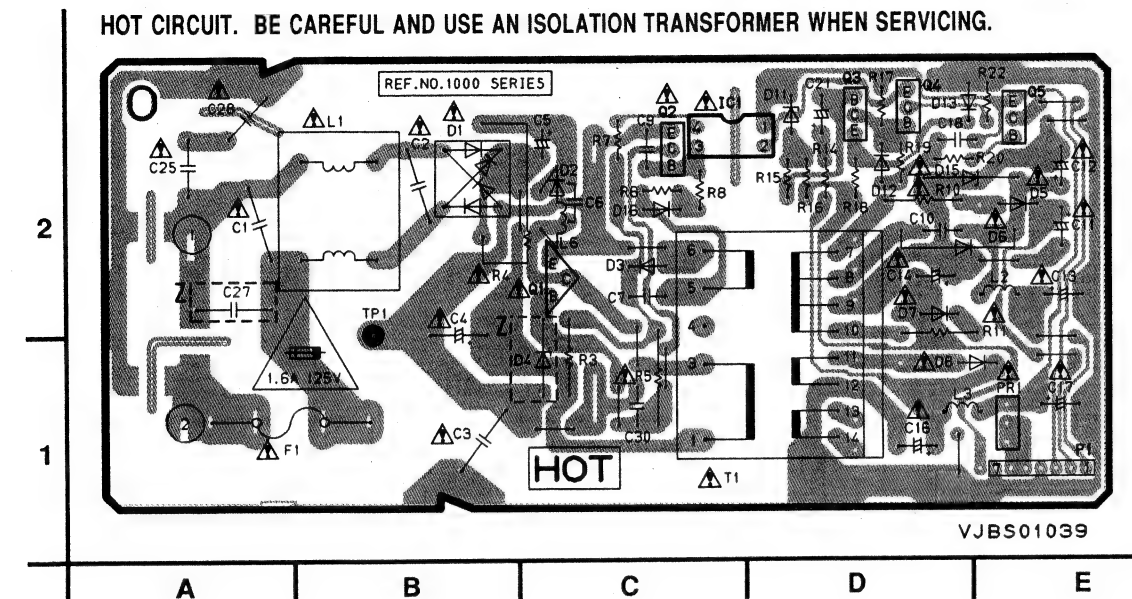
UPPER CYLINDER UNIT	
UNIT NUMBER	MODEL NUMBER MARK
VEHS0536	A, B, C, D, E, F, G
VEHS0537	H

IV. CIRCUIT BOARD DIAGRAMS POWER SUPPLY ASS'Y VEPS01039A1

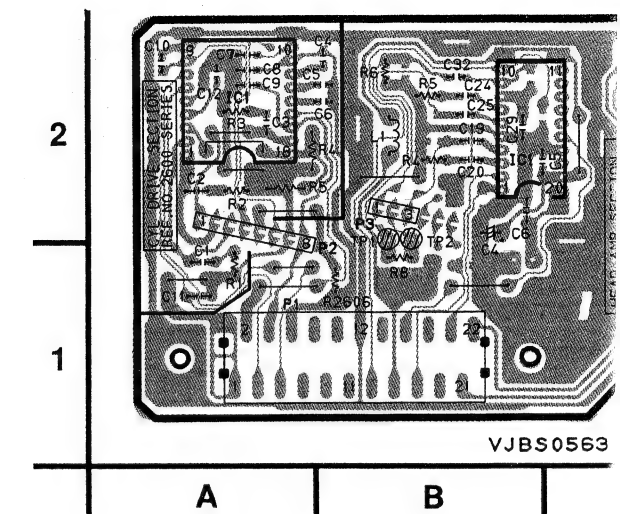
HEAD AMP ASS'Y VEPS

NOTE:
FOR SCHEMATIC AND C.B.A. DIAGRAM NOTES,REFER
TO BEGINNING OF SCHEMATIC SECTION (SECTION III)

IMPORTANT SAFETY NOTICE:
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SPECIAL CHARACTERISTICS IMPORTANT FOR SAFETY.
WHEN REPLACING ANY OF THESE COMPONENTS,USE
ONLY THE SPECIFIED PARTS.

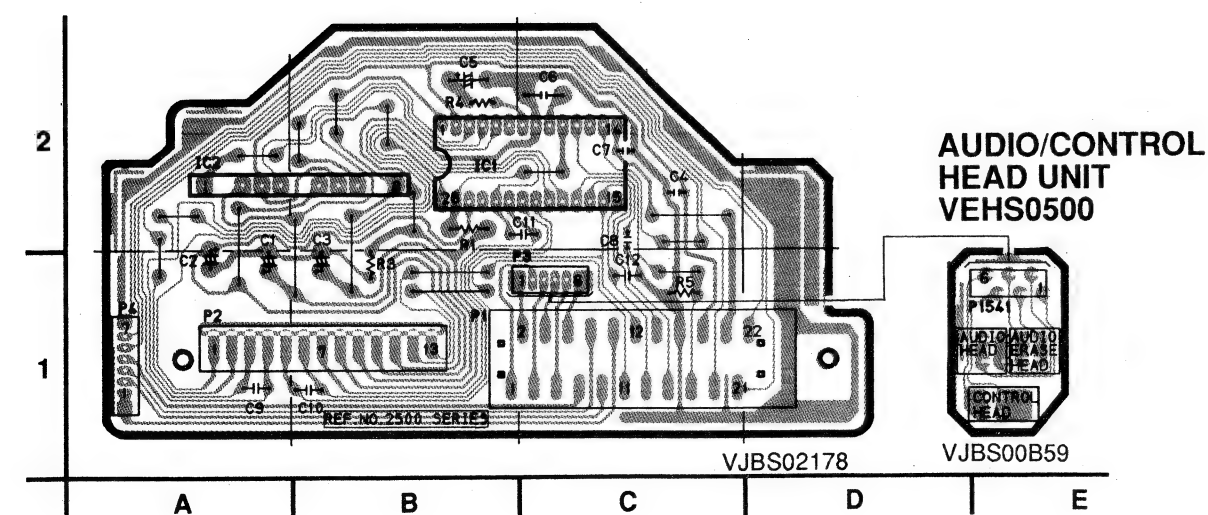


POWER SUPPLY	
TRANSISTOR	
Q1001	C-2
Q1002	C-2
Q1003	D-2
Q1004	D-2
Q1005	E-2
IC	
IC1001	C-2
CONNECTOR	
P1001	E-1
TEST POINT	
TP1001	B-2



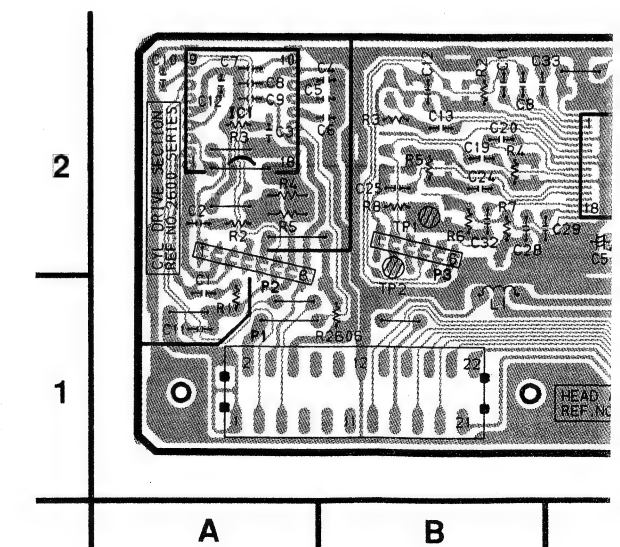
CAPSTAN MOTOR DRIVE C.B.A. VEPS02178A1

HEAD AMP ASS'Y VEPS

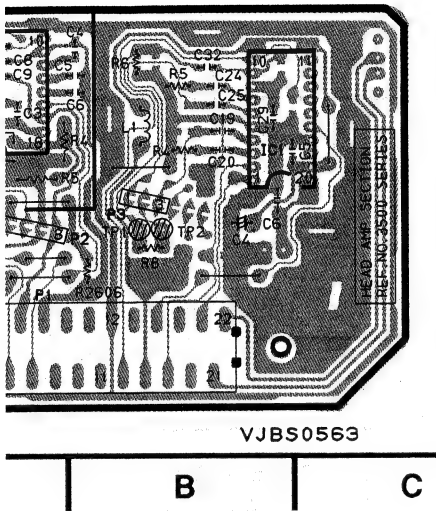


LEADLESS COMPONENT PARTS LOCATION GUIDE
CAPSTAN MOTOR DRIVE C. B. A.

R2503	B-1	C2508	C-2
R2504	B-2	C2509	A-1
R2505	C-1	C2510	B-1
C2504	C-2	C2511	C-2
C2507	C-2	C2512	C-1



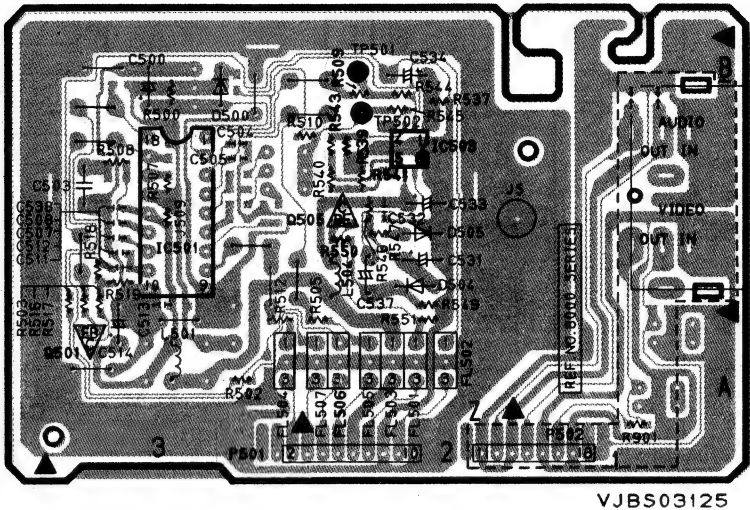
P ASS'Y VEPS0563CA1 (A,B,C,D,E,F,G)



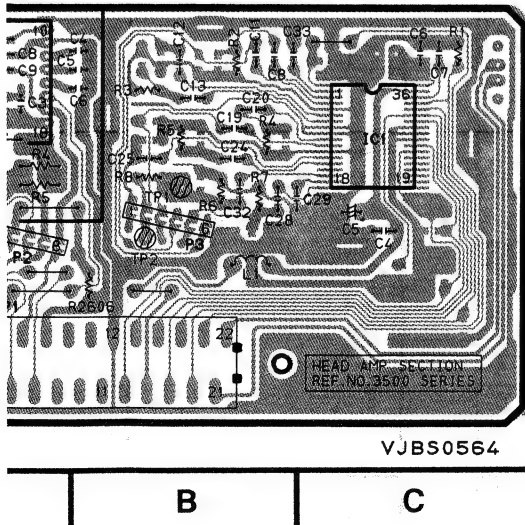
LEADLESS COMPONENT PARTS LOCATION GUIDE
HEAD AMP ASS'Y

R2601	A-1	C2603	A-2	C3505	C-2
R2602	A-2	C2604	B-2	C3506	B-2
R2603	A-2	C2605	B-2	C3519	B-2
R2606	B-1	C2606	B-2	C3520	B-2
R3504	B-2	C2607	A-2	C3524	B-2
R3405	B-2	C2608	A-2	C3525	B-2
R3506	B-2	C2609	A-2	C3529	B-2
R3508	B-1	C2610	A-2	C3532	B-2
C2601	A-1	C2611	A-1		
C2602	A-2	C2612	A-2		

CCV C.B.A. VEPS03125C2



P ASS'Y VEPS0564CA1 (H)



LEADLESS COMPONENT PARTS LOCATION GUIDE
HEAD AMP ASS'Y

R2601	A-1	C2602	A-2	C3507	C-2
R2602	A-2	C2603	A-2	C3508	B-2
R2603	A-2	C2604	B-2	C3511	B-2
R2606	B-1	C2605	B-2	C3512	B-2
R3501	C-2	C2606	B-2	C3513	B-2
R3502	B-2	C2607	A-2	C3519	B-2
R3503	B-2	C2608	A-2	C3520	B-2
R3504	B-2	C2609	A-2	C3524	B-2
R3405	B-2	C2610	A-2	C3525	B-2
R3506	B-2	C2611	A-1	C3528	B-2
R3507	B-2	C2612	A-2	C3529	C-2
R3508	B-2	C3504	C-2	C3532	B-2
C2601	A-1	C3506	C-2	C3533	C-2

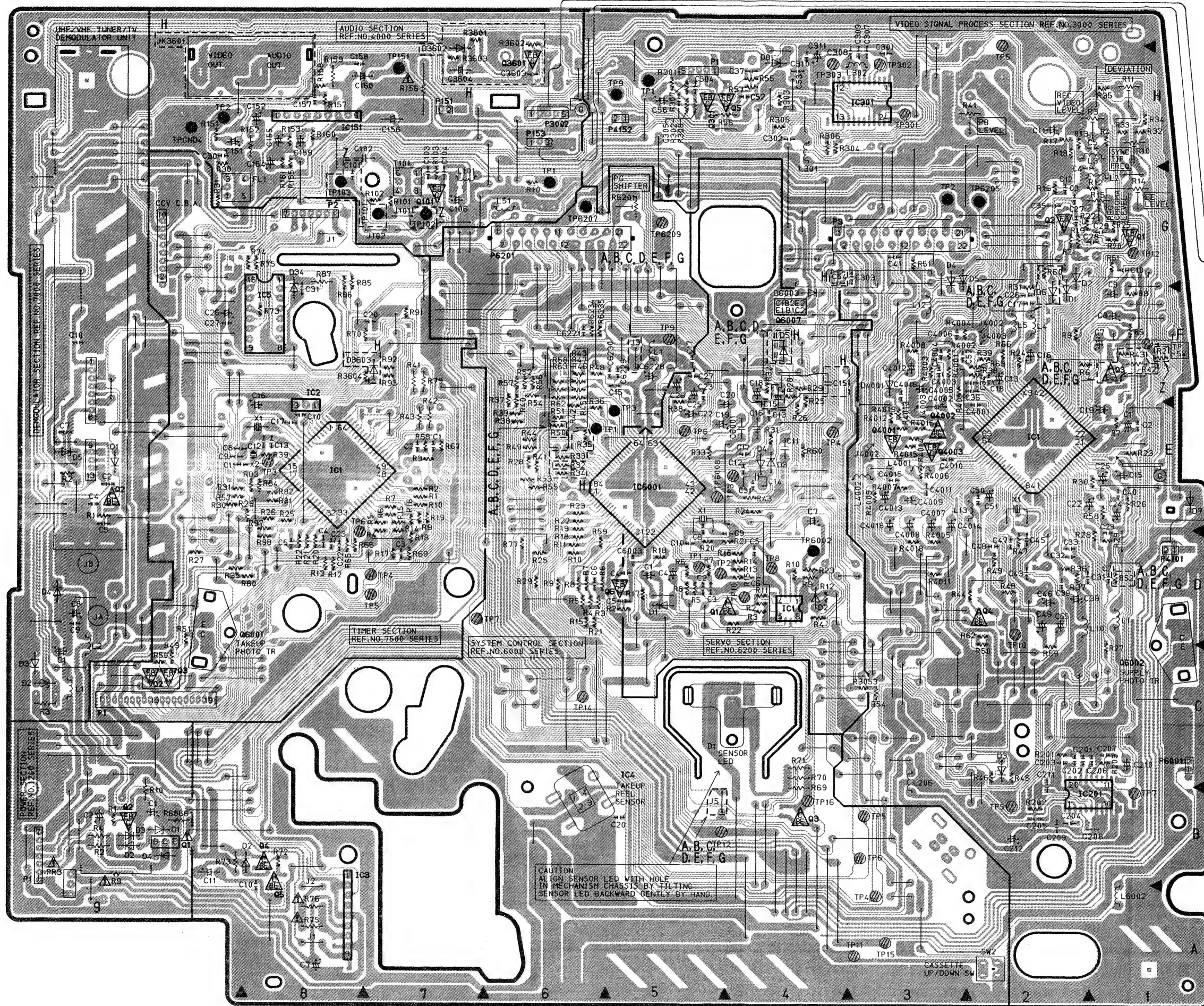
LEADLESS COMPONENT PARTS LOCATION GUIDE
CCV C. B. A.

Q8501	A-3	R8517	A-3	R8549	B-2
Q8505	B-2	R8518	B-3	R8550	B-2
R8500	B-3	R8519	B-3	R8551	A-2
R8502	A-2	R8537	B-2	C8504	B-3
R8503	A-3	R8539	B-2	C8505	B-3
R8505	B-2	R8540	B-2	C8507	B-3
R8507	B-3	R8541	B-2	C8508	B-3
R8508	B-3	R8543	B-2	C8511	B-3
R8509	B-2	R8544	B-2	C8512	B-3
R8510	B-2	R8545	B-2	C8513	A-3
R8512	B-2	R8546	B-2	C8532	B-2
R8516	A-3	R8547	B-2	C8538	B-3

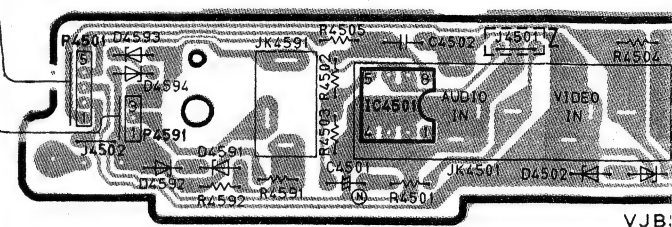
COMPARISON CHART
OF MODELS & MARKS

MODEL	MARK
PV-M1324	A
PV-M1324W	B
VV134	C
VV134W	D
PV-M2024	E
VV204	F
VV204W	G
PV-M2044	H
NOT USED	Z

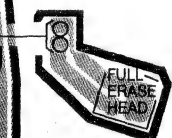
MAIN (POWER/SIGNAL PROCESS/AUDIO/SYSTEM CONTROL/SERVO/TIMER) C.B.A. VEPS02223A1 (A,B,C,D) / VEPS02223B1 (E)




AUDIO/VIDEO JACK C.B.A. VEPS04117A1



**FULL ERASE
HEAD C.B.A.
UNIT
VEPS0482A1**

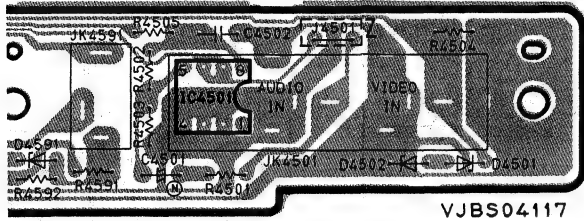


NOTE:
FOR SCHEMATIC AND C.B.A. DIAGRAM NC
TO BEGINNING OF SCHEMATIC SECTION (

IMPORTANT SAFETY NOTICE: COMPONENTS IDENTIFIED BY THE SIGN  SPECIAL CHARACTERISTICS IMPORTANT FOR S WHEN REPLACING ANY OF THESE COMPONENTS: ONLY THE SPECIFIED PARTS.


,D) / VEPS02223B1 (E,F,G) / VEPS02223C1 (H)

DEO JACK C.B.A. VEPS04117A1 (E,F,G,H)



SE
A.
A1

FOR SCHEMATIC AND C.B.A. DIAGRAM NOTES, REFER TO BEGINNING OF SCHEMATIC SECTION (SECTION III)

IMPORTANT SAFETY NOTICE: COMPONENTS IDENTIFIED BY THE SIGN  HAVE SPECIAL CHARACTERISTICS IMPORTANT FOR SAFETY. WHEN REPLACING ANY OF THESE COMPONENTS, USE ONLY THE SPECIFIED PARTS.

MAIN	
TRANSISTOR	
Q1201	B-9
Q1202	B-9
Q3001	G-1
Q3002	G-2
Q3003	F-1
Q3004	D-2
Q3005	H-4
Q3301	H-5
Q3601	H-6
Q4001	E-3
Q4002	E-3
Q4003	E-3
Q4101	G-7
Q6001	D-8
Q6002	C-1
Q6003	B-4
Q6004	B-8
Q6005	A-8
Q6006	D-5
Q6007	F-4
Q6201	D-5
Q7002	E-9
Q7502	C-9
Q7503	C-9

COMPARISON CHART
OF MODELS & MARKS

MODEL	MARK
PV-M1324	A
PV-M1324W	B
VV134	C
VV134W	D
PV-M2024	E
VV204	F
VV204W	G
PV-M2044	H
NOT USED	Z

MAIN	
IC	
IC3001	E-2
IC3201	B-2
IC3301	H-3
IC4151	H-8
IC6001	E-5
IC6003	B-8
IC6004	C-5
IC6201	D-4
IC7501	E-8
IC7502	F-8
IC7503	F-8

MAIN	
CONNECTOR	
P1201	B-9
P3001	H-5
P3002	H-6
P3003	G-4
P4101	D-1
P4151	H-7
P4152	H-5
P4153	H-6
P6001	C-1
P6201	G-6
P7501	C-9
P7502	G-8

MAIN	
ADJUSTMENT	
R3003	H-1
R3010	H-1
R3011	H-1
R3014	G-1
R3015	G-1
R3041	H-2
R6201	G-5

MAIN	
TEST POINT	
TP3001	H-5
TP3002	G-3
TP3005	B-2
TP3006	H-2
TP3007	B-1
TP3009	H-5
TP3010	D-2
TP3012	G-1
TP3301	H-3
TP3302	H-3
TP3303	H-4
TP4001	G-6
TP4002	H-9
TP4101	G-7
TP4102	G-7
TP4103	G-8
TP4151	H-7
TP6001	E-5
TP6002	D-4
TP6003	E-5
TP6004	A-3
TP6005	B-3
TP6006	B-3
TP6007	D-6
TP6008	E-5
TP6009	F-5
TP6011	A-3
TP6012	B-5
TP6014	C-6
TP6015	A-3
TP6016	B-4
TP6201	D-5
TP6202	D-5
TP6203	E-4
TP6204	E-4
TP6205	G-2
TP6206	E-5
TP6207	G-6
TP6208	D-4
TP6209	G-5
TP6210	D-4
TP7503	E-8
TP7504	D-7
TP7505	D-7
TP7506	E-8
TPGND4	H-9
TP +5V	F-1

LEADLESS COMPONENT PARTS LOCATION GUIDE

MAIN C. B. A.

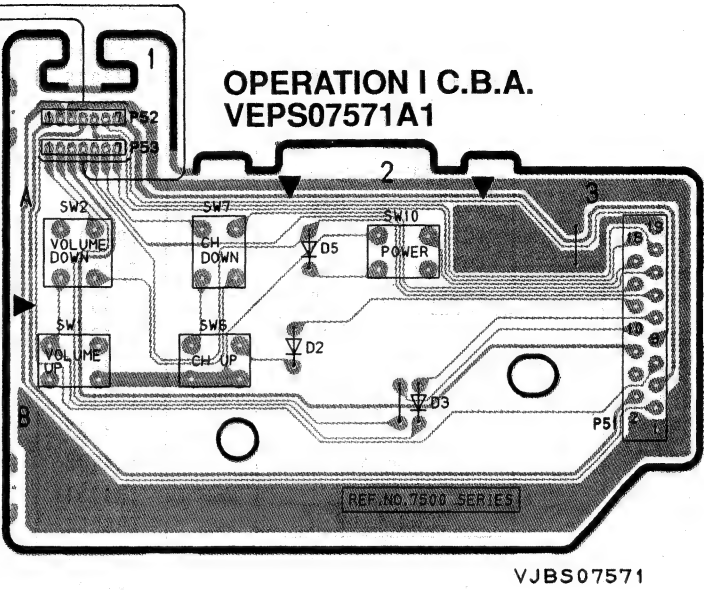
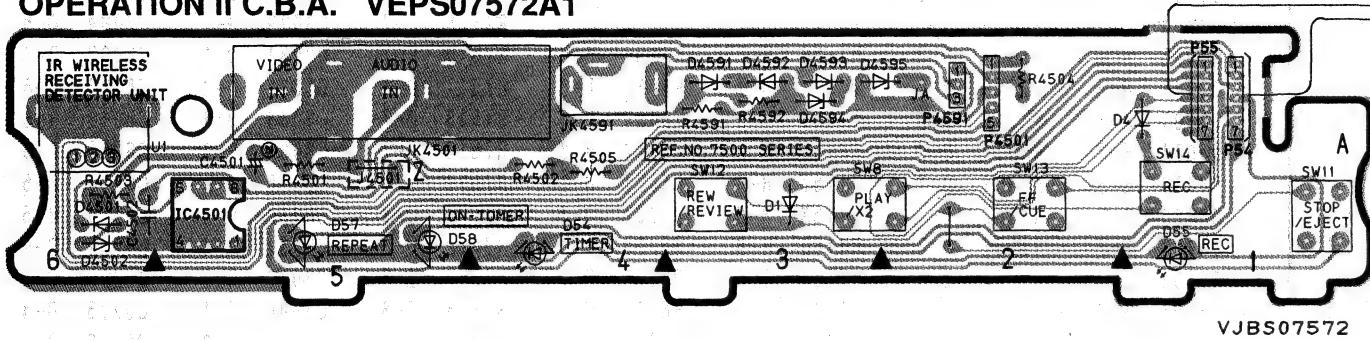
Q1202	B-9	R3040	E-3	R4019	E-3	R6054	F-6	R7510	E-7	C3023	E-1	C4104	H-7
Q3001	G-1	R3043	F-1	R4030	H-9	R6055	E-6	R7512	D-8	C3026	F-2	C4157	H-8
Q3002	G-2	R3044	D-3	R4031	G-9	R6056	F-6	R7513	D-8	C3027	G-2	C4158	H-8
Q3003	F-1	R3045	C-2	R4101	G-7	R6057	F-6	R7514	E-7	C3028	G-1	C6003	D-5
Q3004	D-2	R3046	C-2	R4102	G-7	R6058	F-6	R7515	E-7	C3029	G-1	C6004	D-5
Q3005	H-4	R3047	D-2	R4103	H-7	R6059	E-6	R7516	E-7	C3031	D-1	C6005	D-5
Q3301	H-5	R3048	D-2	R4151	H-9	R6062	F-6	R7517	D-7	C3032	D-2	C6006	D-6
Q3601	H-6	R3049	D-2	R4153	H-8	R6063	F-6	R7518	D-7	C3033	D-2	C6010	B-8
Q4001	E-3	R3050	C-2	R4155	G-8	R6072	B-8	R7519	E-7	C3034	F-2	C6015	F-5
Q4002	E-3	R3051	G-3	R4157	H-8	R6077	D-6	R7520	D-8	C3035	G-2	C6017	F-5
Q4003	E-3	R3052	D-1	R4158	H-8	R6202	D-4	R7521	D-8	C3036	F-2	C6020	B-5
Q4101	G-7	R3053	C-3	R4160	H-8	R6203	D-4	R7522	D-8	C3037	H-4	C6202	D-5
Q6003	B-4	R3054	C-3	R4161	G-8	R6204	D-4	R7525	E-8	C3039	D-2	C6203	D-5
Q6004	B-8	R3055	H-4	R6002	D-5	R6205	D-5	R7526	E-8	C3040	E-1	C6205	D-4
Q6005	A-8	R3057	H-4	R6003	D-6	R6206	D-5	R7527	D-9	C3041	G-3	C6206	D-4
Q6006	D-5	R3058	E-1	R6004	D-6	R6207	D-5	R7529	E-8	C3043	D-2	C6208	D-5
Q6007	F-4	R3059	C-2	R6005	D-6	R6208	D-5	R7530	E-9	C3045	D-2	C6209	D-4
Q6201	D-5	R3060	G-2	R6006	D-6	R6209	D-4	R7531	E-9	C3047	D-2	C6210	D-5
Q7002	E-9	R3061	G-1	R6007	D-6	R6210	D-4	R7535	D-9	C3048	D-2	C6212	E-4
Q7502	C-9	R3062	D-2	R6008	D-6	R6211	D-4	R7539	E-8	C3050	E-2	C6213	E-4
Q7503	C-9	R3063	F-2	R6009	D-6	R6212	D-4	R7549	D-9	C3053	H-4	C6217	E-4
R1201	B-9	R3066	F-2	R6010	D-6	R6213	D-4	R7550	C-9	C3054	G-4	C6221	F-6
R3004	H-1	R3201	C-2	R6011	D-6	R6214	D-4	R7551	D-9	C3057	F-2	C6223	F-5
R3005	F-1	R3202	B-2	R6015	D-6	R6215	D-4	R7557	E-9	C3201	C-2	C6227	F-5
R3006	F-2	R3203	C-1	R6018	D-6	R6216	D-4	R7565	D-8	C3202	C-2	C6229	F-5
R3007	E-1	R3301	H-5	R6019	E-6	R6217	D-5	R7566	D-7	C3203	C-2	C6230	F-5
R3008	F-1	R3302	H-5	R6021	D-6	R6218	D-5	R7567	E-7	C3204	B-2	C6231	E-4
R3009	F-2	R3303	H-4	R6022	E-6	R6220	D-5	R7568	E-7	C3205	B-2	C7002	E-9
R3012	G-1	R3304	H-4	R6023	E-6	R6221	D-4	R7569	D-7	C3206	C-1	C7004	E-9
R3013	H-2	R3305	H-4	R6025	D-6	R6222	D-4	R7570	F-8	C3207	C-1	C7005	E-9
R3016	G-2	R3306	H-4	R6028	E-6	R6223	D-4	R7573	F-8	C3208	B-1	C7007	E-9
R3017	H-2	R3307	H-5	R6029	D-6	R6224	E-4	R7574	G-8	C3209	B-2	C7009	D-9
R3018	H-2	R3308	H-5	R6032	E-6	R6225	F-4	R7575	G-8	C3211	C-2	C7010	F-9
R3019	G-2	R3601	H-7	R6033	E-6	R6226	E-4	R7580	D-8	C3301	H-3	C7501	E-7
R3020	G-1	R3602	H-6	R6034	E-6	R6228	F-4	R7581	E-8	C3302	H-4	C7502	E-7
R3021	G-2	R3603	H-7	R6035	E-6	R6229	F-4	R7582	E-8	C3303	G-3	C7503	D-7
R3022	G-2	R3604	F-8	R6036	F-6	R6231	E-4	R7583	E-8	C3304	H-5	C7504	E-8
R3023	E-1	R4001	F-3	R6037	F-6	R6232	F-4	R7584	E-8	C3305	H-5	C7505	D-8
R3024	F-2	R4002	F-3	R6038	E-6	R6233	E-5	R7585	G-8	C3307	H-3	C7508	E-9
R3025	G-1	R4003	F-3	R6039	E-6	R6234	F-6	R7586	F-8	C3308	H-4	C7509	E-9
R3026	E-1	R4004	F-3	R6040	E-6	R6235	F-6	R7591	F-7	C3309	H-3	C7510	E-8
R3027	C-1	R4005	D-3	R6041	E-6	R6238	E-5	R7592	F-7	C3310	H-4	C7511	E-9
R3028	D-2	R4006	E-3	R6042	E-6	R6243	E-4	R7593	F-7	C3603	H-6	C7512	E-8
R3029	D-1	R4007	E-3	R6043	F-6	R6260	E-4	R7597	E-8	C4001	E-2	C7513	E-8
R3030	E-2	R4008	F-3	R6044	E-6	R7001	E-9	R7598	D-8	C4002	E-3	C7517	E-8
R3031	F-2	R4009	E-3	R6045	E-6	R7002	E-9	C3002	E-1	C4003	F-3	C7520	F-7
R3032	H-1	R4010	G-6	R6046	F-6	R7501	E-7	C3003	G-2	C4004	F-3	C7522	D-8
R3033	H-1	R4011	D-3	R6047	F-6	R7502	E-7	C3004	G-2	C4006	F-3	C7523	D-8
R3034	H-1	R4012	E-3	R6048	F-6	R7503	E-7	C3005	H-1	C4010	E-3	C7527	F-9
R3035	H-1	R4013	E-3	R6049	E-6	R7504	D-7	C3010	G-1	C4011	E-3	C7531	F-8
R3036	D-2	R4014	E-3	R6050	E-6	R7505	E-7	C3012	G-2	C4015	E-3		
R3037	D-2	R4015	E-3	R6051	E-6	R7506	E-7	C3017	F-2	C4016	F-3		
R3038	F-2	R4016	E-3	R6052	F-6	R7507	E-7	C3018	F-2	C4030	H-9		
R3039	F-2	R4018	D-3	R6053	E-6	R7509	E-7	C3021	D-1	C4103	H-7		

OPERATION I/II C.B.A. (A,B,C,D)

TV MAIN C.B.A. TNP71920CC (

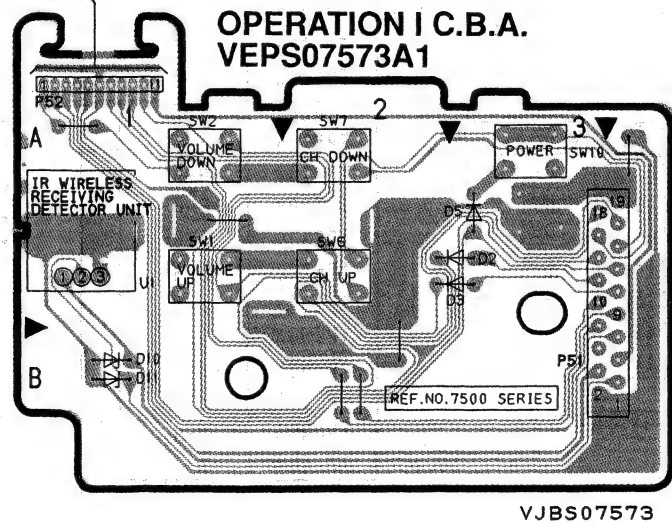
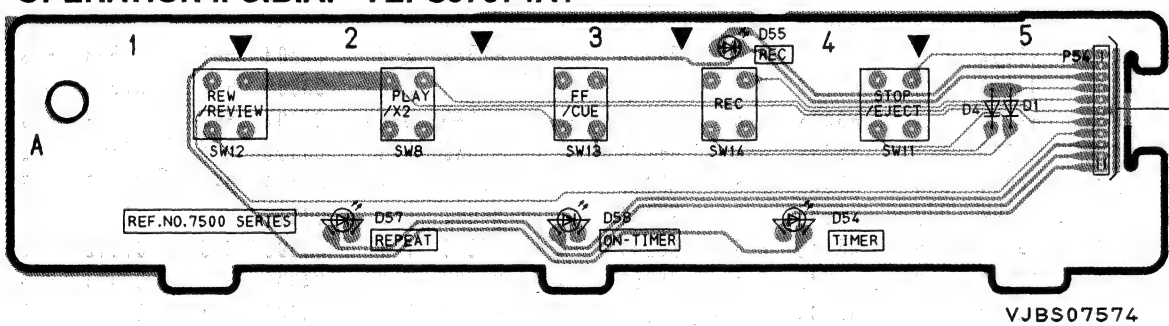
NOTE:
FOR SCHEMATIC AND C.B.A. DIAGRAM NOTES, RE
TO BEGINNING OF SCHEMATIC SECTION (SECTIC

OPERATION II C.B.A. VEPS07572A1



OPERATION I/II C.B.A. (E,F,G,H)

OPERATION II C.B.A. VEPS07574A1



4

3

2


1

A

B

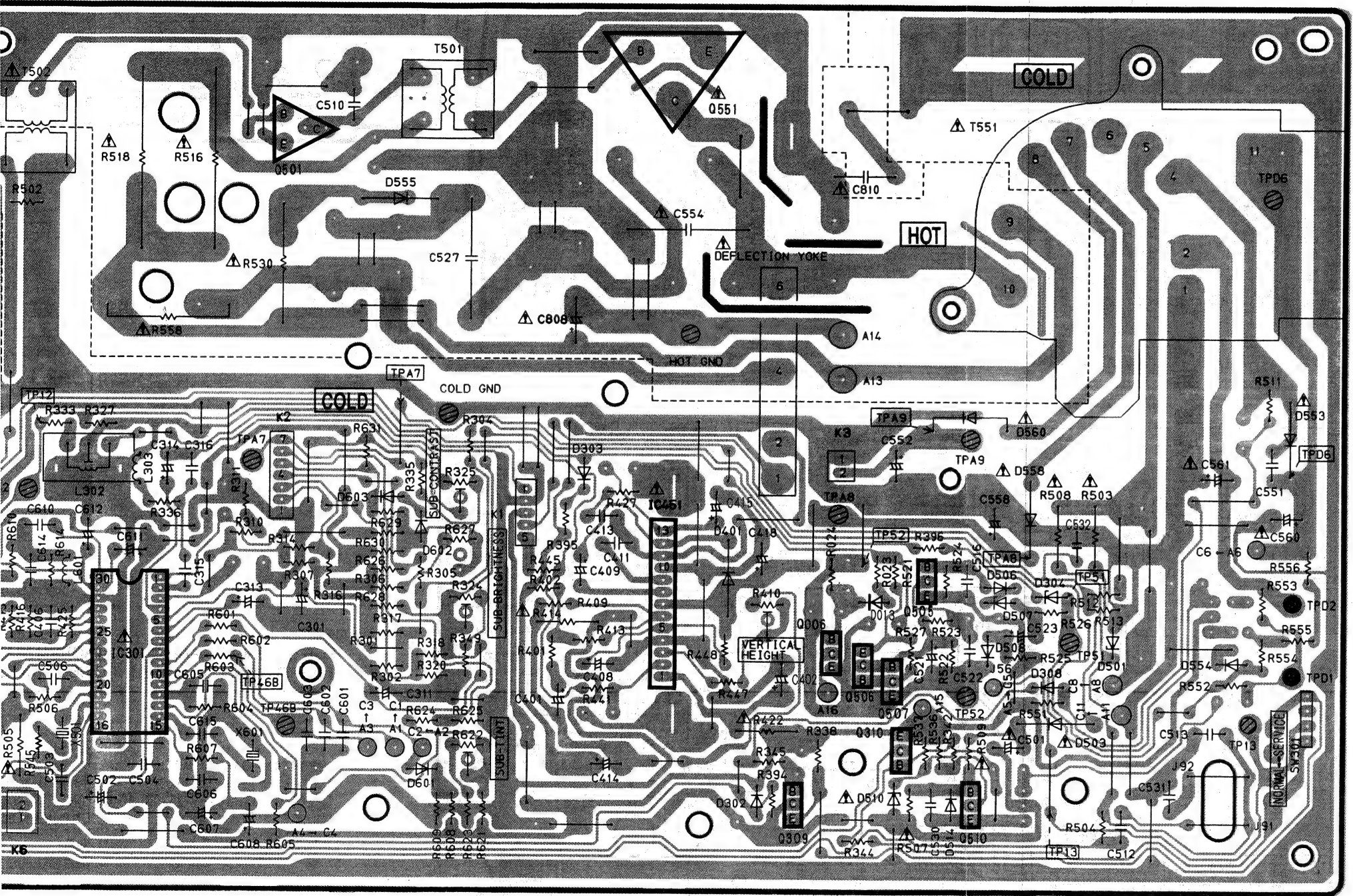
A. TNP71920CC (A,B,C,D)

IC AND C.B.A. DIAGRAM NOTES, REFER
OF SCHEMATIC SECTION (SECTION III)

IMPORTANT SAFETY NOTICE:
COMPONENTS IDENTIFIED BY THE SIGN  HAVE
SPECIAL CHARACTERISTICS IMPORTANT FOR SAFETY.
WHEN REPLACING ANY OF THESE COMPONENTS, USE
ONLY THE SPECIFIED PARTS.

COMPARISON CHART
OF MODELS & MARKS

MODEL	MARK
PV-M1324	A
PV-M1324W	B
VV134	C
VV134W	D
PV-M2024	E
VV204	F
VV204W	G
PV-M2044	H
NOT USED	Z




TNP71920

TV MAIN	
TRANSISTOR	
Q006	D-2
Q309	D-1
Q310	D-1
Q501	B-3
Q505	E-2
Q506	D-1
Q507	E-1
Q510	E-1
Q551	D-4
IC	
IC301	B-2
IC451	D-2
CONNECTOR	
K1	C-2
K2	B-2
K3	D-2
K6	A-1
K7	A-1
A1	C-1
A2	C-1
A3	C-1
A4	B-1
A5	E-1
A6	F-2
A8	E-1
A11	E-1
A13	D-3
A14	D-3
A15	E-1
A16	D-1

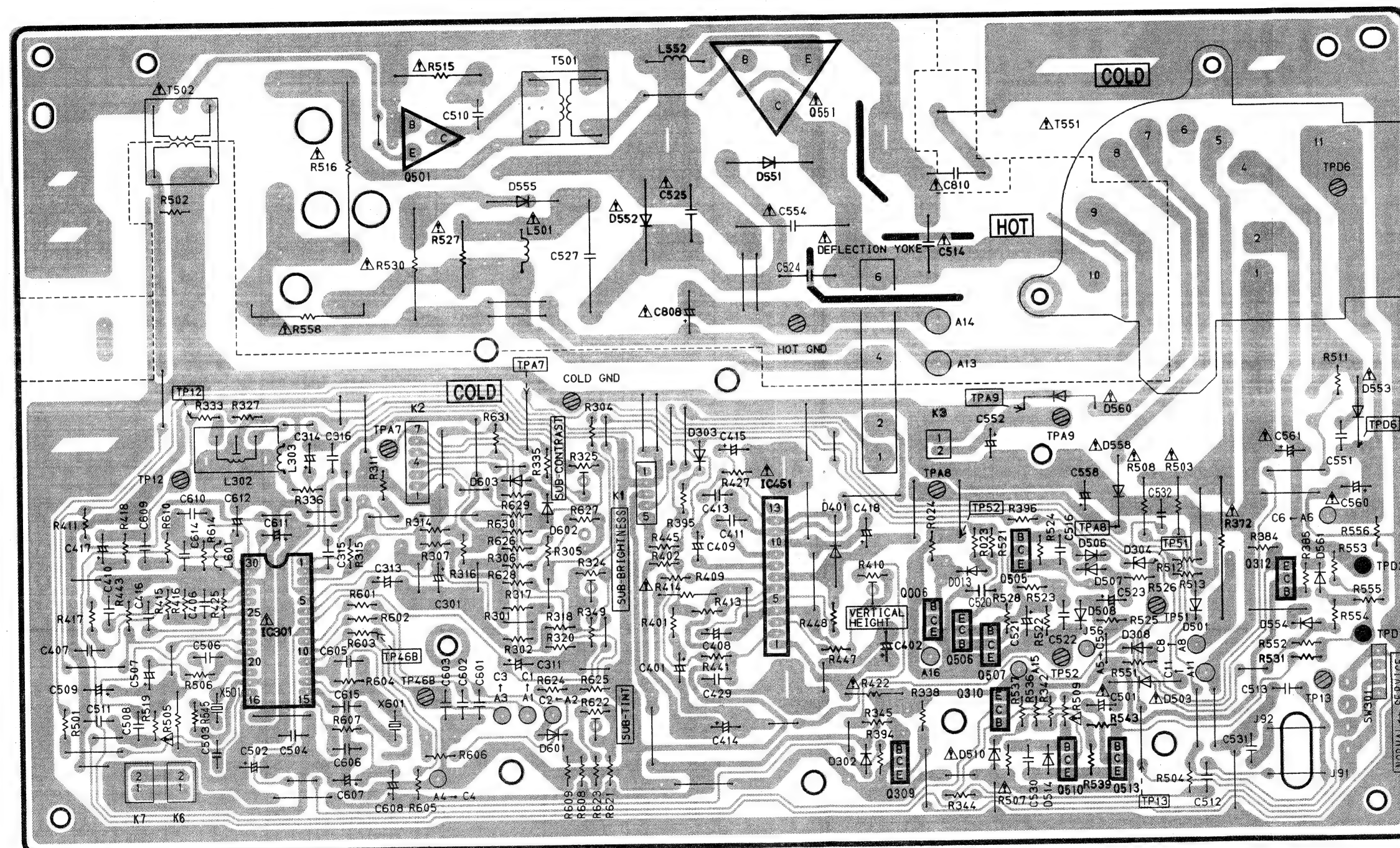
TV MAIN	
TEST POINT	
TP12	A-2
※TP12	A-3
TP13	F-1
※TP13	E-1
TP46B	B-1
※TP46B	B-1
TP51	E-2
※TP51	E-2
TP52	E-1
※TP52	E-2
TPA7	B-2
※TPA7	C-3
TPA8	D-2
※TPA8	E-2
TPA9	E-2
※TPA9	E-2
TPD1	F-2
TPD2	F-2
TPD6	F-3
※TPD6	F-2
ADJUSTMENT	
R324	C-2
R325	C-2
R410	D-2
R622	C-1

※ : COMPONENT SIDE

TV MAIN C.B.A. TNP71922CC (E,F,G,H)

IMPORTANT SAFETY NOTICE:
COMPONENTS IDENTIFIED BY THE SIGN  HAVE
SPECIAL CHARACTERISTICS IMPORTANT FOR SAFETY.
WHEN REPLACING ANY OF THESE COMPONENTS, USE
ONLY THE SPECIFIED PARTS.

NOTE:
FOR SCHEMATIC AND C.B.A. DIAGRAM NOTES, REFER
TO BEGINNING OF SCHEMATIC SECTION (SECTION III)



TNP71922

TV MAIN	
TRANSISTOR	
Q006	D-2
Q309	D-1
Q310	D-1
Q312	F-2
Q501	B-3
Q505	E-2
Q506	D-1
Q507	E-1
Q510	E-1
Q513	E-1
Q551	D-4
IC	
IC301	B-2
IC451	D-2
CONNECTOR	
K1	C-2
K2	B-2
K3	D-2
K6	A-1
K7	A-1
A1	C-1
A2	C-1
A3	C-1
A4	B-1
A5	E-1
A6	F-2
A8	E-2
A11	E-1
A13	D-3
A14	D-3
A15	E-1
A16	D-1

TV MAIN	
TEST POINT	
TP12	A
※TP12	A
TP13	F
※TP13	E
TP46B	B
※TP46B	B
TP51	E
※TP51	E
TP52	E
※TP52	E
TPA7	B
※TPA7	C
TPA8	D
※TPA8	E
TPA9	E
※TPA9	E
TPD1	F
TPD2	F
TPD6	F
※TPD6	F
ADJUSTMENT	
R324	C
R325	C
R410	C
R622	C
※ : COMPONENT	

COMPARISON C
OF MODELS &

MODEL
PV-M1324
PV-M1324W
VV134
VV134W
PV-M2024
VV204
VV204W
PV-M2044
NOT USED

CRT C.B.A. T

**CAUTION: WHEN S
AVOID**

2

1

A

CRT C.B.A. T

**CAUTION: WHEN SERV
AVOID TOU**

2

1

A

Q353

Q352

R359

R356

R358

R354

C10

C2

D1

A2 ← C2

COMPARISON CHART OF MODELS & MARKS

MODEL	MARK
PV-M1 324	A
PV-M1 324W	B
VV134	C
VV134W	D
PV-M2024	E
VV204	F
VV204W	G
PV-M2044	H
NOT USED	Z

	B	C	D
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	B	C	D
--	---	---	---

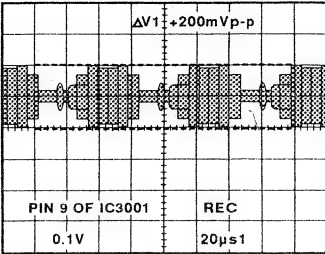
CRT C.B.A. TNP73135AA (A,B,C,D)

	A	B	
--	---	---	--

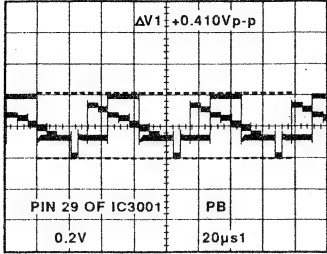
CRT	
TRANSISTOR	
Q351	C-2
Q352	A-1
Q353	A-1
CONNECTOR	
C1	A-1
C2	A-1
C3	C-1
C4	A-1
C5	C-1
C6	B-1
C8	A-1
C10	A-2
C11	A-1
C12	B-1
TEST POINT	
TP47E	C-2
TP48	C-1
TP50	C-1
ADJUSTMENT	
R363	C-1
R365	C-1
R369	C-2
R370	C-2
R371	C-2

WAVEFORM PHOTOGRAPH

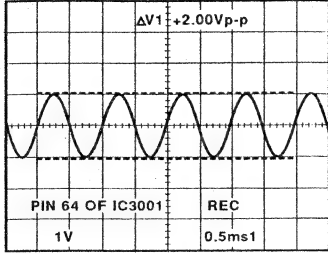
MAIN C.B.A.



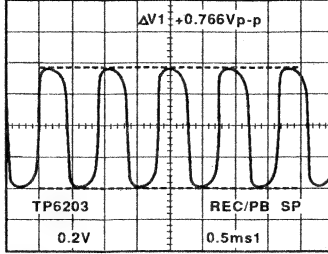
WF1



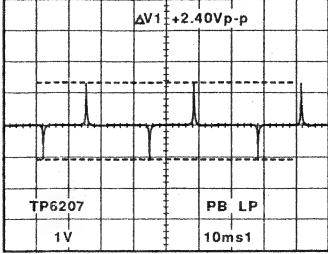
WF6



WF11

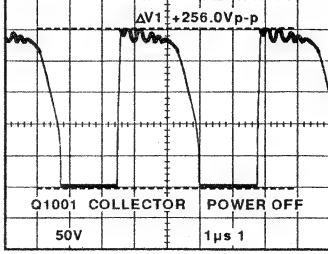


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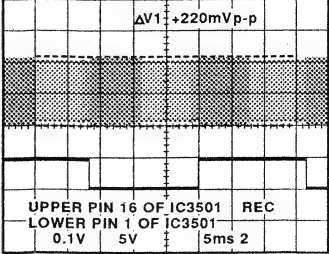
WF18

POWER SUPPLY ASS'Y



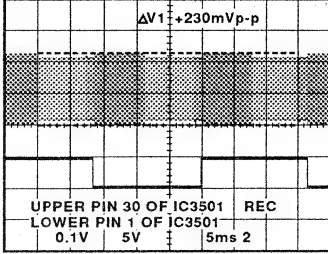
WF19

HEAD AMP ASS'Y
(A,B,C,D,E,F,G)



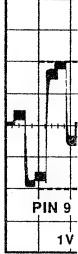
UPPER WF22
LOWER WF23

HEAD AMP ASS'Y
(H)

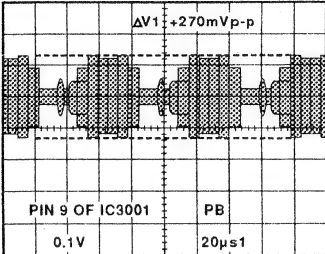


UPPER WF25
LOWER WF26

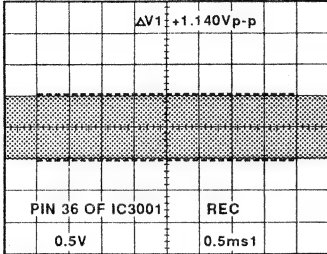
TV M/



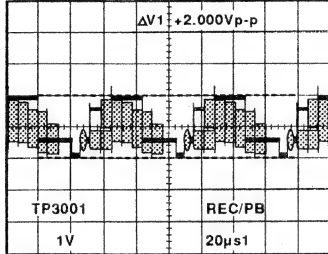
WF28



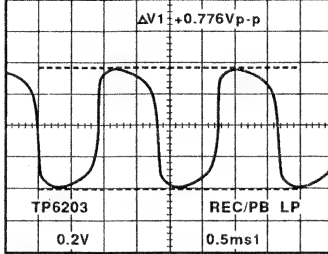
WF1



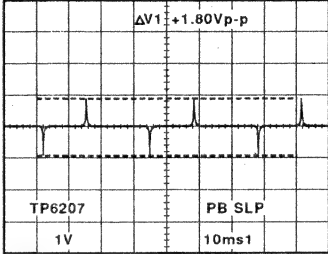
WF7



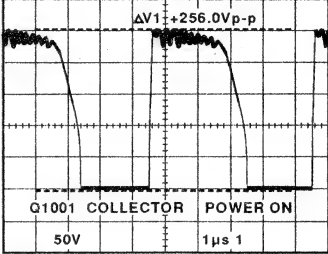
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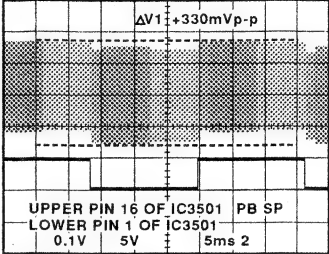
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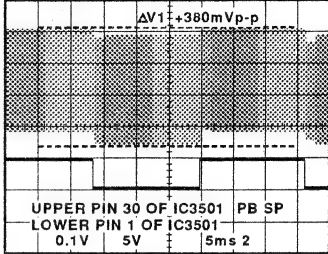
WF18



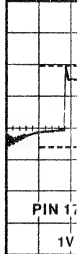
WF19



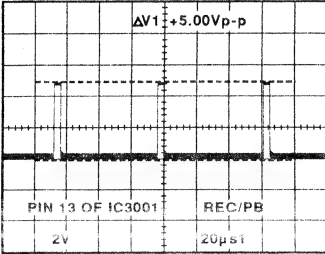
UPPER WF22
LOWER WF23



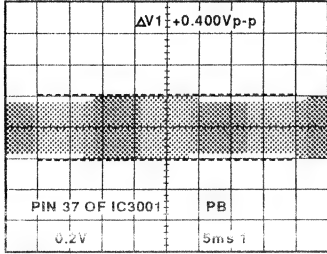
UPPER WF25
LOWER WF26



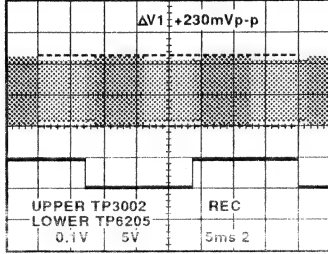
WF29



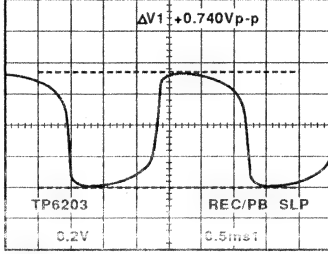
WF2



WF8

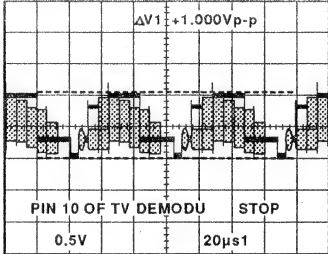


UPPER WF13
LOWER WF17

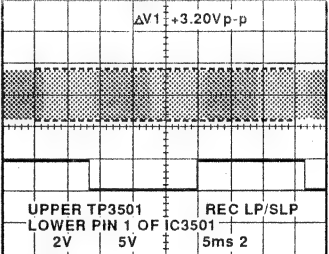


WF15

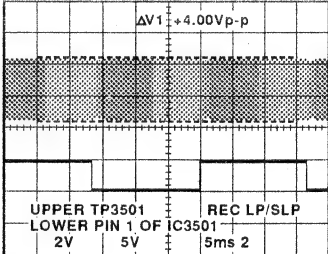
UHF/VHF TUNER/TV
DEMODULATOR UNIT



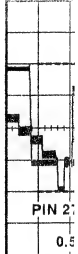
WF20



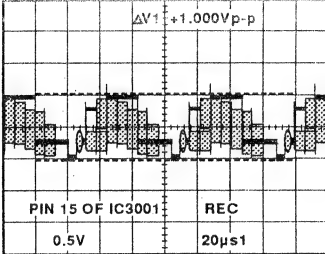
UPPER WF24
LOWER WF23



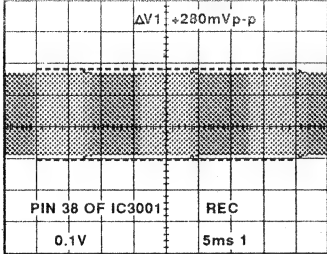
UPPER WF27
LOWER WF26



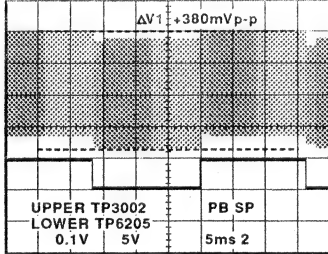
WF31



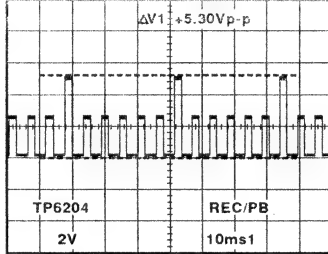
WF3



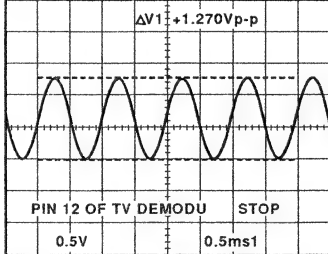
WF9



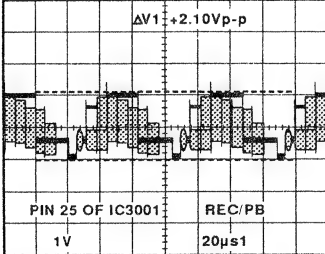
UPPER WF13
LOWER WF17



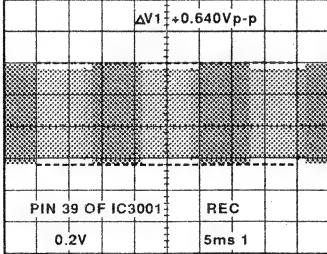
WF16



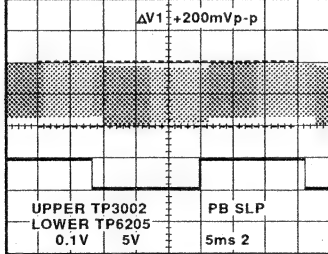
WF21



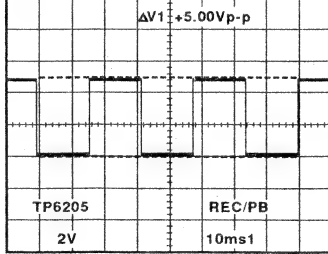
WF4



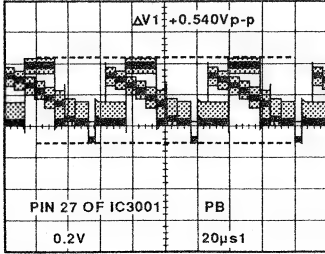
WF10



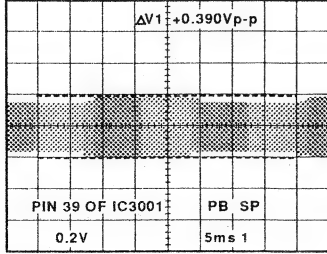
UPPER WF13
LOWER WF17



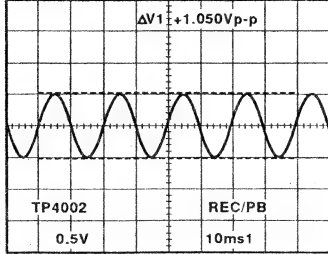
WF17



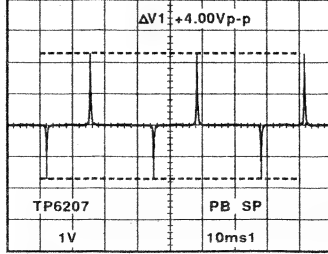
WF5



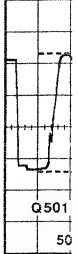
WF10



WF14



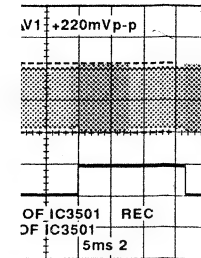
WF18



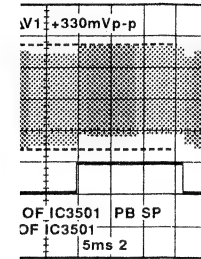
WF32

WF33

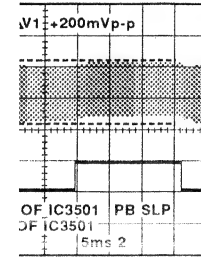
ASS'Y F,G)



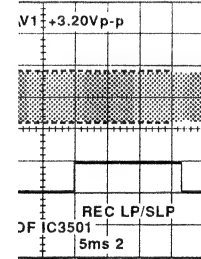
F22
F23



F22
F23

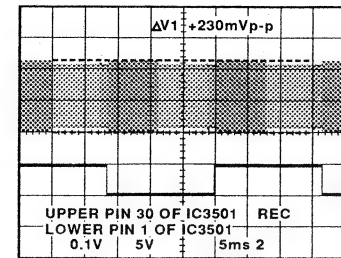


F22
F23

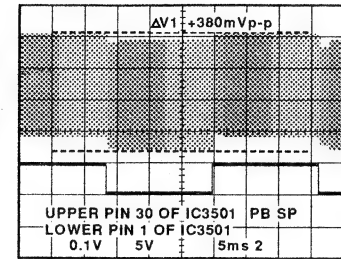


F24
F25

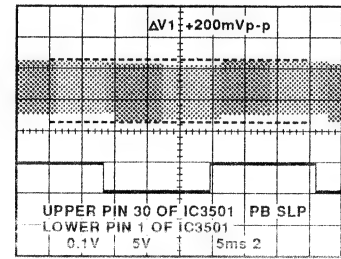
HEAD AMP ASS'Y (H)



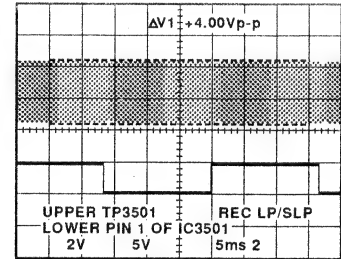
UPPER WF25
LOWER WF26



UPPER WF25
LOWER WF26

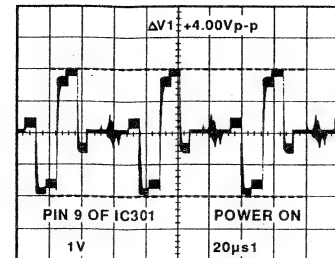


UPPER WF25
LOWER WF26

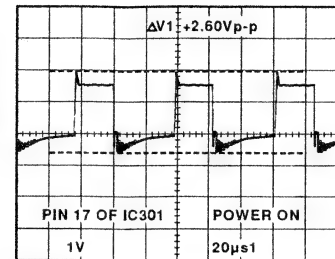


UPPER WF27
LOWER WF26

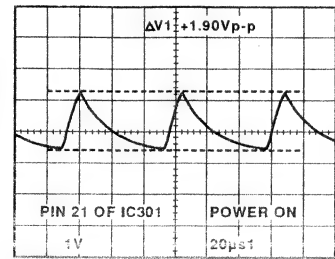
TV MAIN C.B.A.



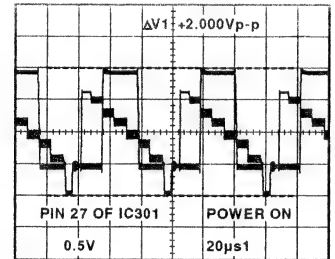
WF28



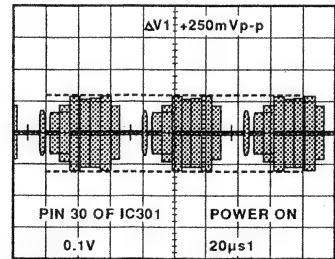
WF29



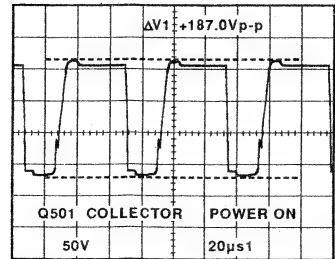
WF30



WF31

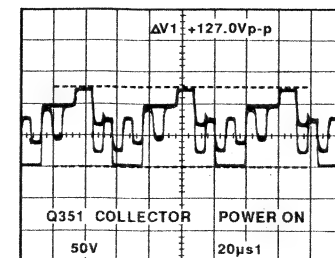


WF32

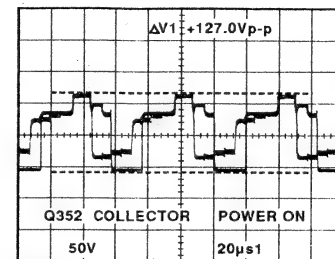


WF33

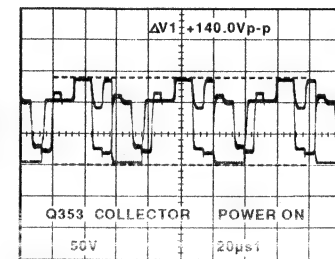
CRT C.B.A.



WF34



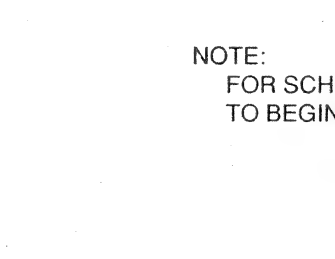
WF35



WF39



WF40



WF37

COMPARISON CHART OF MODELS & MARKS

MODEL	MARK
PV-M1324	A
PV-M1324W	B
VV134	C
VV134W	D
PV-M2024	E
VV204	F
VV204W	G
PV-M2044	H
NOT USED	Z

NOTE:
FOR SCHEMATIC AND C.B.A. DIAGRAM NOTES,REFER
TO BEGINNING OF SCHEMATIC SECTION (SECTION III)

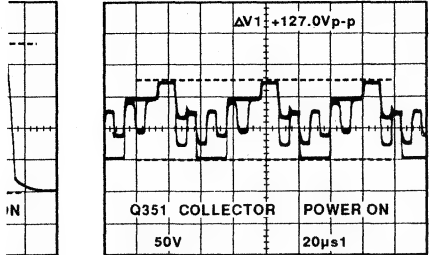
VOLTAGE CHART (SYSTEM

MODE	STOP	FF	REW
PIN NO.			
IC2501			
1	2.7	4.8	4.8
2	14.5	14.5	14.5
3	14.0	14.0	14.0
4	14.5	14.0	14.0
5	14.2	14.2	14.2
6	—	—	—
7	0.7	0.7	0.7
8	0	0	0
9	0.1	0.7	0.7
10	0	0.2	0.2
11	0.5	0.5	0.5
12	—	—	—
13	3.1	3.1	3.1
14	5.2	5.2	5.2
15	1.1	2.5	2.5
16	2.5	2.5	2.5
17	2.6	0.1	0.1
18	1.7	1.7	1.7
19	1.6	1.6	1.6
20	1.6	1.6	1.6
21	1.6	1.6	1.6
22	1.6	1.6	1.6
23	1.6	1.6	1.6
24	1.6	1.6	1.6
25	—	—	—
26	2.7	4.0	5.1
27	0	0.2	0.2
28	2.7	4.1	5.1
IC2502			
1	14.5	13.9	13.9
2	2.7	4.1	5.1
3	14.6	14.2	14.2
4	14.5	14.0	14.0
5	2.7	4.1	5.1
6	14.5	14.5	14.5
7	14.0	14.0	14.0
8	2.7	4.8	4.8
IC2601			
1	13.3	13.0	13.0
2	13.3	13.0	13.0
3	0.1	0.1	0.1
4	0.6	0.6	0.6
5	0	0	0
6	2.7	2.7	2.7
7	2.6	2.6	2.6
8	3.0	9.0	9.0
9	0.9	0.9	0.9
10	2.9	2.9	2.9
11	5.1	5.1	5.1
12	3.9	3.9	3.9
13	3.9	3.9	3.9
14	3.9	3.9	3.9
15	1.2	1.2	1.2
16	13.3	13.3	13.3
17	13.3	13.3	13.3
18	0.1	0.1	0.1

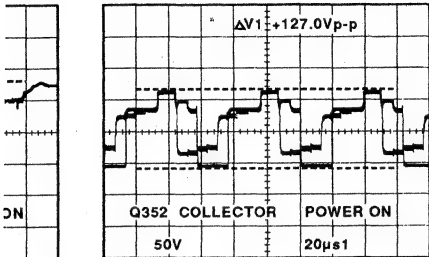
MODE	STOP	FF	REW
PIN NO.			
IC6001			
1	5		
2	0		
3	1		
4	—		
5	—		
6	0		
7	—		
8	0		
9	0		
10	0		
11	0		
12	0		
13	5		
14	0		
15	—		
16	0		
17	4		
18	5		
19	5		
20	5		
21	0		
22	2		
23	0		
24	2		
25	0		
26	2		
27	2		
28	—		
29	—		
30	—		
31	1		
32	2		
33	0		
34	0		
35	—		
36	0		
37	0		
38	1		
39	1		
40	2		
41	5		
42	0		
43	2		
44	2		
45	2		
46	2		
47	1		
48	0		
49	0		
50	2		
51	2		
52	2		
53	2		
54	5		
55	0		
56	0		
57	0		
58	2		
59	2		
60	0		

VOLTAGE CHART (SYSTEM CONTROL/SERVO)

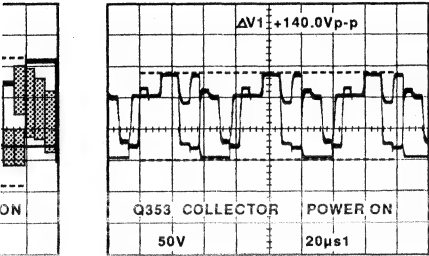
CRT C.B.A.



WF38



WF39



WF40

COMPARISON CHART
OF MODELS & MARKS

MODEL	MARK
PV-M1324	A
PV-M1324W	B
VV134	C
VV134W	D
PV-M2024	E
VV204	F
VV204W	G
PV-M2044	H
NOT USED	Z

NOTE:
FOR SCHEMATIC AND C.B.A. DIAGRAM NOTES,REFER
TO BEGINNING OF SCHEMATIC SECTION (SECTION III)

MODE PIN NO.	STOP	FF	REW
IC2501			
1	2.7	4.8	4.8
2	14.5	14.5	14.5
3	14.0	14.0	14.0
4	14.5	14.0	14.0
5	14.2	14.2	14.2
6	—	—	—
7	0.7	0.7	0.7
8	0	0	0
9	0.1	0.7	0.7
10	0	0.2	0.2
11	0.5	0.5	0.5
12	—	—	—
13	3.1	3.1	3.1
14	5.2	5.2	5.2
15	1.1	2.5	2.5
16	2.5	2.5	2.5
17	2.6	0.1	0.1
18	1.7	1.7	1.7
19	1.6	1.6	1.6
20	1.6	1.6	1.6
21	1.6	1.6	1.6
22	1.6	1.6	1.6
23	1.6	1.6	1.6
24	1.6	1.6	1.6
25	—	—	—
26	2.7	4.0	5.1
27	0	0.2	0.2
28	2.7	4.1	5.1
IC2502			
1	14.5	13.9	13.9
2	2.7	4.1	5.1
3	14.6	14.2	14.2
4	14.5	14.0	14.0
5	2.7	4.1	5.1
6	14.5	14.5	14.5
7	14.0	14.0	14.0
8	2.7	4.8	4.8
IC2601			
1	13.3	13.0	13.0
2	13.3	13.0	13.0
3	0.1	0.1	0.1
4	0.6	0.6	0.6
5	0	0	0
6	2.7	2.7	2.7
7	2.6	2.6	2.6
8	3.0	9.0	9.0
9	0.9	0.9	0.9
10	2.9	2.9	2.9
11	5.1	5.1	5.1
12	3.9	3.9	3.9
13	3.9	3.9	3.9
14	3.9	3.9	3.9
15	1.2	1.2	1.2
16	13.3	13.3	13.3
17	13.3	13.3	13.3
18	0.1	0.1	0.1

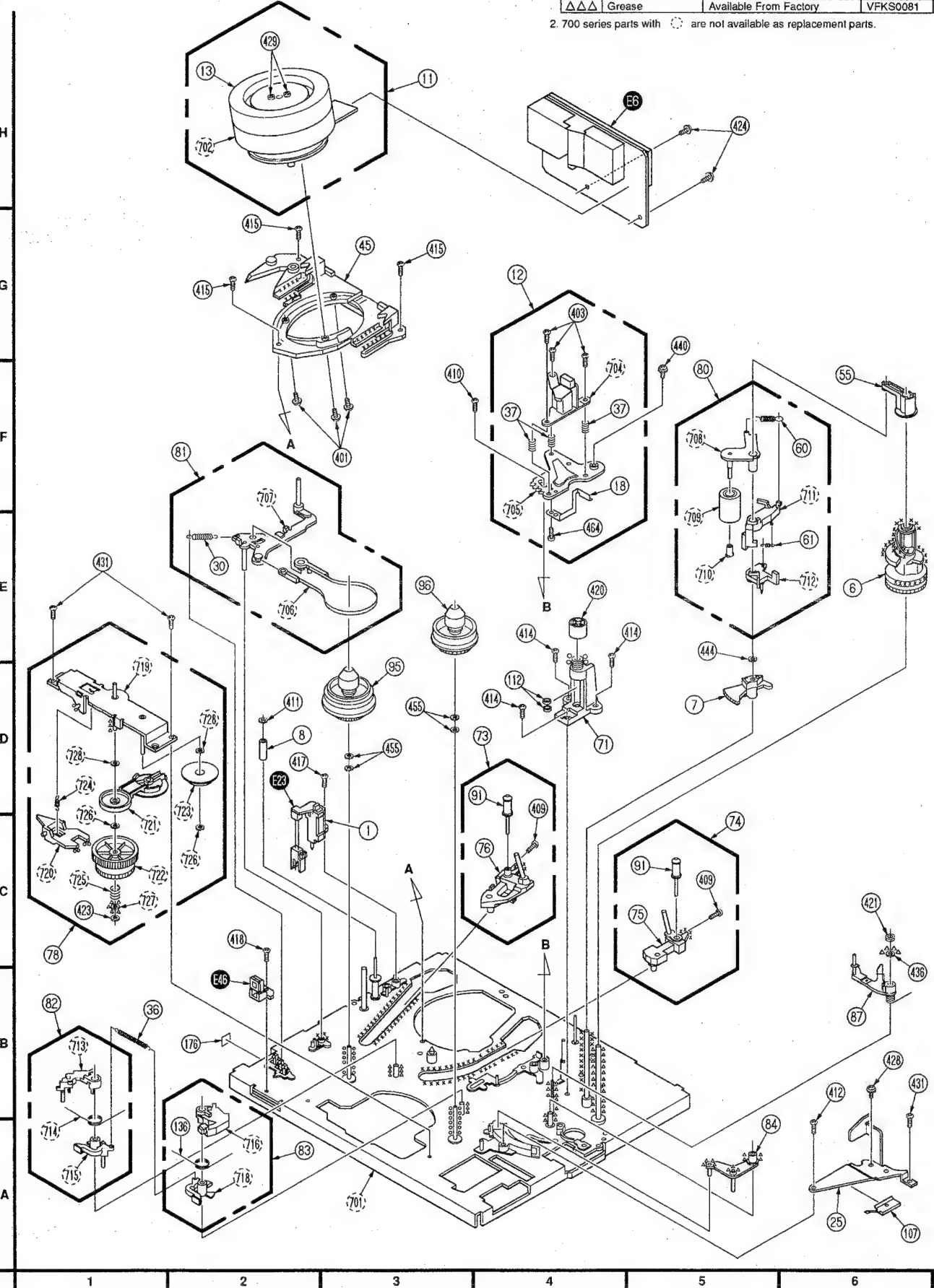
MODE PIN NO.	STOP	FF	REW
IC6001			
1	5.1	5.1	5.1
2	0	0	0
3	1.4	1.4	1.4
4	—	—	—
5	—	—	—
6	0.3	0.3	0.3
7	—	—	—
8	0.1	0.1	0.1
9	0.1	0.1	0.1
10	0.1	0.1	0.1
11	0.1	0.1	0.1
12	5.1	5.1	5.1
13	5.1	5.1	5.1
14	0.5	0.5	0.5
15	—	—	—
16	0.1	0.1	0.1
17	4.8	4.8	4.8
18	5.1	5.1	5.1
19	5.1	5.1	5.1
20	5.1	5.1	5.1
21	0	0	0
22	2.6	2.6	2.6
23	0.1	0.1	0.1
24	2.6	2.6	2.6
25	0	2.6	2.6
26	2.4	2.4	2.4
27	2.6	2.6	2.6
28	—	—	—
29	—	—	—
30	—	—	—
31	1.1	1.1	1.1
32	2.0	2.0	2.0
33	0	0	0
34	0	0	0
35	—	—	—
36	0.6	0.6	0.6
37	0.1	5.1	5.1
38	1.8	1.8	1.8
39	1.1	2.5	2.5
40	2.7	0.1	5.1
41	5.0	5.0	5.0
42	0	0	0
43	2.9	2.9	2.9
44	2.6	2.6	2.6
45	2.6	2.6	2.6
46	2.6	2.6	2.6
47	1.2	1.2	1.2
48	0	0	0
49	0	0	0
50	2.6	2.6	2.6
51	2.6	2.6	2.6
52	2.3	2.5	2.5
53	2.8	2.4	2.4
54	5.1	5.1	5.1
55	0	0	0
56	0	0	0
57	0	0	0
58	2.6	2.6	2.6
59	2.6	2.6	2.6
60	0	0	0

MODE PIN NO.	STOP	FF	REW
61	2.8	2.8	2.8
62	2.6	2.6	2.6
63	5.1	5.1	5.1
64	2.6	2.6	2.6
65	3.9	3.9	3.9
66	5.1	5.1	5.1
67	5.1	5.1	5.1
68	—	—	—
69	0.8	0.1	0.1
70	0	0	0
71	0	0	0
72	5.1	5.1	5.1
73	5.1	5.1	5.1
74	5.1	5.1	5.1
75	5.1	5.1	5.1
76	5.1	5.1	5.1
(A,B,C,D,E,F,G)			
76	0	0	0
(H)			
77	0	0	0
78	5.1	0.2	0.2
79	5.1	5.1	5.1
80	0.2	5.1	5.1
81	5.1	0.2	0.2
82	—	—	—
(A,B,C,D,E,F,G)			
82	2.6	2.6	2.6
(H)			
83	—	—	—
(A,B,C,D,E,F,G)			
83	5.1	0.1	0.1
(H)			
84	0.1	0.1	0.1
IC6003			
1	0	0	0
2	0	0	0
3	0	0	0
4	—	—	—
5	0	0	0
6	13.3	13.3	13.3
7	0.9	1.3	1.3
8	0	0	0
9	1.2	1.2	1.2
IC6004			
1	1.3	1.3	1.3
2	0	0	0
3	0	0	0
4	—	—	—
IC6201			
1	2.5	2.5	2.5
2	2.5	2.5	2.5
3	2.5	2.5	2.5
4	0	0	0
5	1.2	2.6	2.6
6	1.2	2.6	2.6
7	1.1	2.4	2.4
8	5.1	5.1	5.1

MODE PIN NO.	STOP	FF	REW
06001			
E	0	0	0
C	5.1	5.1	5.1
B	—	—	—
06002			
E	0	0	0
C	5.1	5.1	5.1
B	—	—	—
06003			
E	0	0	0
C	10.0	10.0	10.0
B	0.3	0.3	0.3
06004			
E	5.1	5.1	5.1
C	5.1	5.1	5.1
B	4.3	4.3	4.3
06005			
E	0	0	0
C	0.1	0.1	0.1
B	5.1	5.1	5.1
06006			
E	5.1	5.1	5.1
C	0	0	0
B	5.1	5.1	5.1
06007			
E1	0	0	0
E2	12.0	12.0	12.0
C1	12.0	12.0	12.0
C2	0.1	0.1	0.1
B1	0	0	0
B2	12.0	12.0	12.0
06201			
E	1.1	2.6	2.6
C	1.1	2.6	2.6
B	0.5	5.1	5.1
TP6001	5.1	5.1	5.1
TP6002	1.8	1.8	1.8
TP6003	0.8	0.1	0.1
TP6004	5.1	5.1	5.1
TP6005	5.1	5.1	5.1
TP6006	4.8	4.8	4.8
TP6007	3.9	3.9	3.9
TP6008	0	0	0
TP6009	5.1	5.1	5.1
TP6011	0	0	0
TP6012	—	—	—
TP6014	5.1	5.1	5.1
TP6015	5.1	5.1	5.1
TP6016	10.0	10.0	10.0
TP6201	2.6	2.6	2.6
TP6202	2.4	2.4	2.4
TP6203	2.6	2.6	2.6
TP6204	1.2	1.2	1.2
TP6205	2.6	2.6	2.6
TP6206	0	0	0
TP6207	2.6	2.6	2.6
TP6208	2.5	2.5	2.5
TP6209	1.1	2.5	2.5
TP6210	1.2	2.6	2.6

V. EXPLODED VIEWS

1 Transport Section



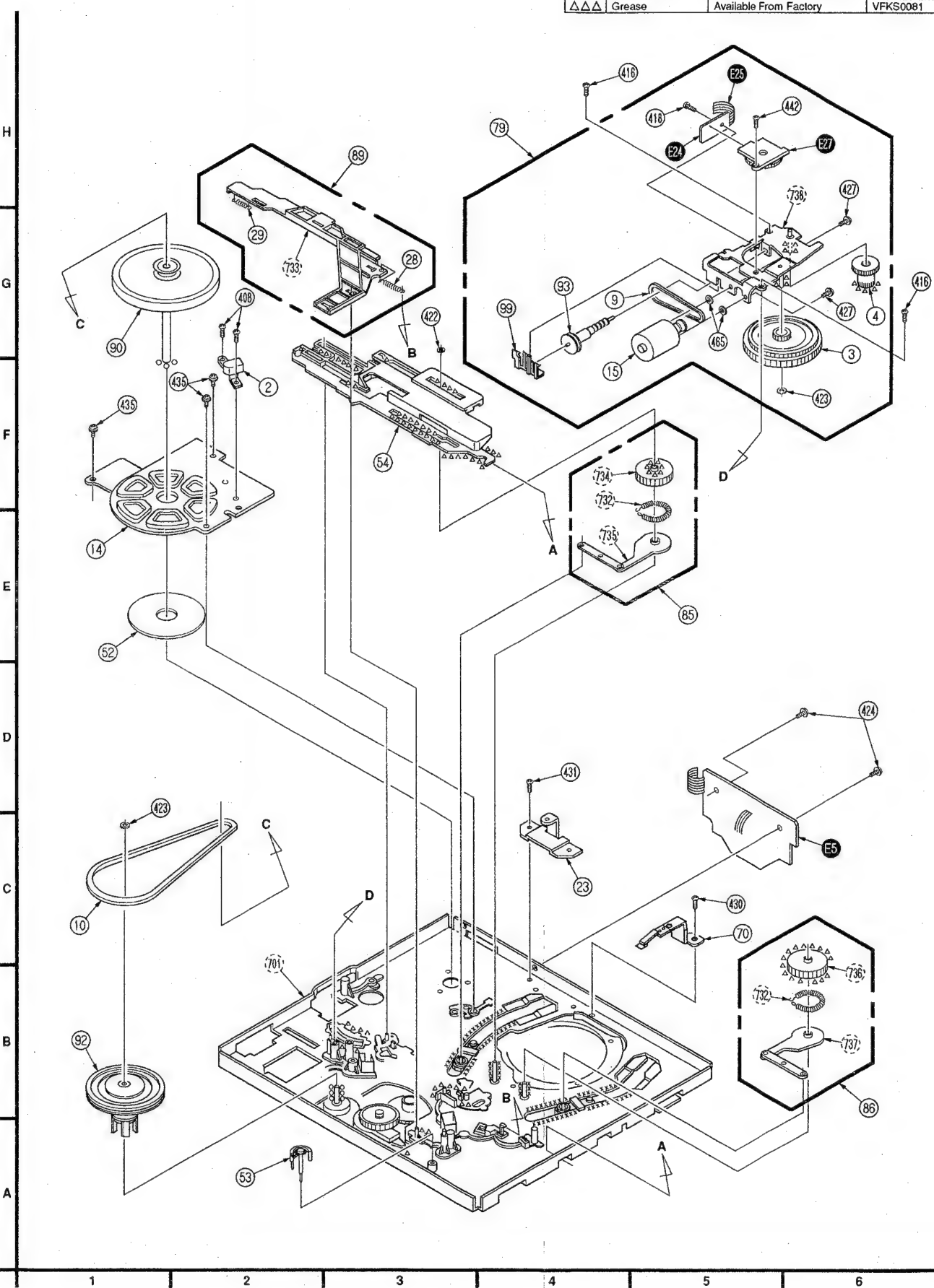
Note: 1. LUBRICATION POINTS

When the marked parts are replaced, apply the recommended Lubricants or adhesive for better maintenance of the unit.

Mark	Kind of Lubricant	Availability	Part Number
XXX	Molybde Grease	Available From Factory	MOR265
OOO	Spindle Oil	Purchase From Local Supplier	-----
AAA	Grease	Available From Factory	VFKS0081

2. 700 series parts with are not available as replacement parts.

2 Moving Mechanism Section



LUBRICATION POINTS

When the marked parts are replaced, apply the recommended Lubricants or adhesive for better maintenance of the unit.

Mark	Kind of Lubricant	Availability	Part Number
XXX	Molybde Grease	Available From Factory	MOR265
OOO	Spindle Oil	Purchase From Local Supplier	-----
AAA	Grease	Available From Factory	VFKS0081

3 Cas

M

Recommended Lubricants

Mark	Part Number
XXX	Molytone Grease
OOO	Spindle Oil
AAA	Grease

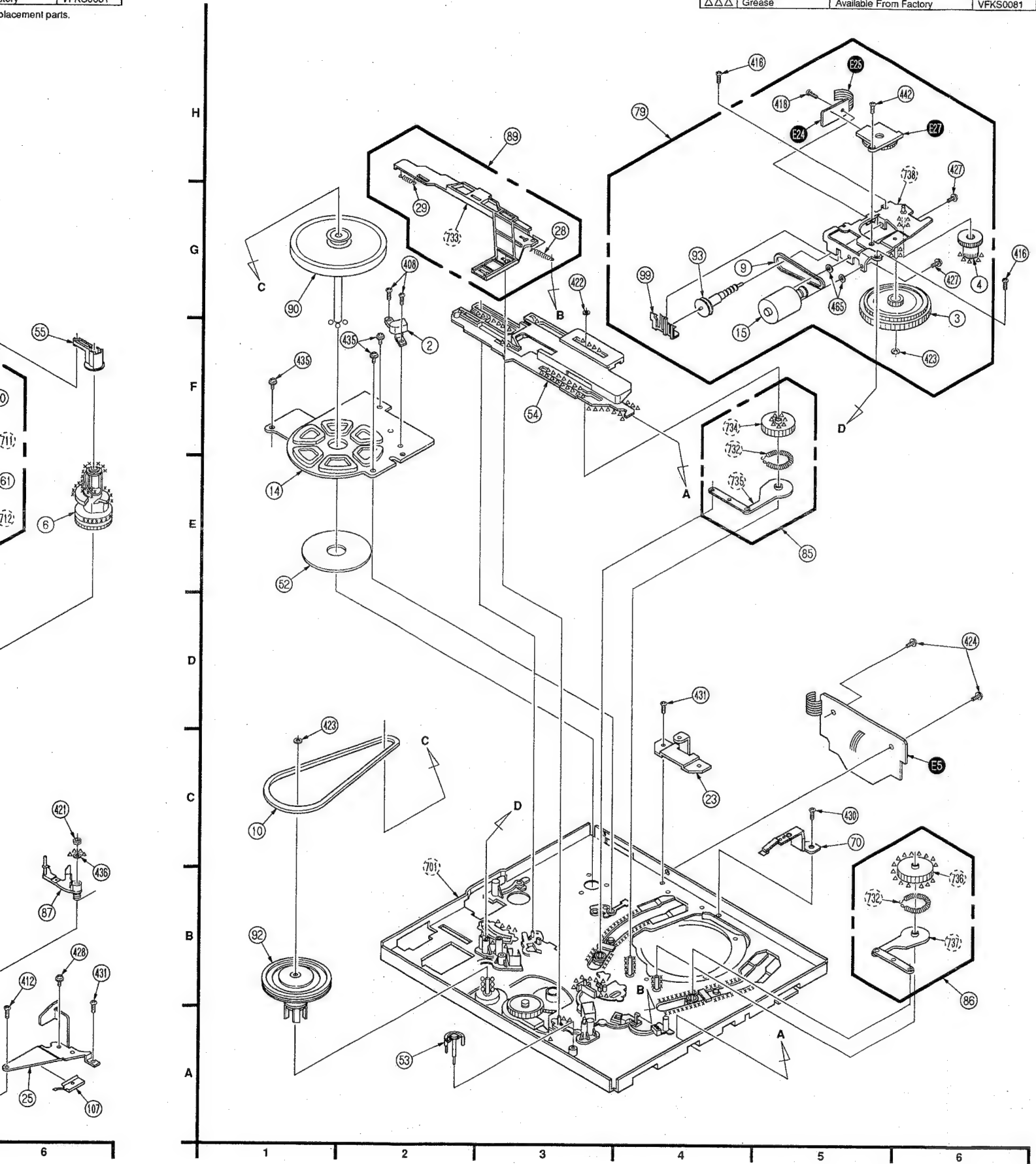
Replacement parts.

2 Moving Mechanism Section

LUBRICATION POINTS

When the marked parts are replaced, apply the recommended Lubricants or adhesive for better maintenance of the unit.

Mark	Kind of Lubricant	Availability	Part Number
XXX	Molytone Grease	Available From Factory	MOR265
OOO	Spindle Oil	Purchase From Local Supplier	-----
AAA	Grease	Available From Factory	VFKS0081

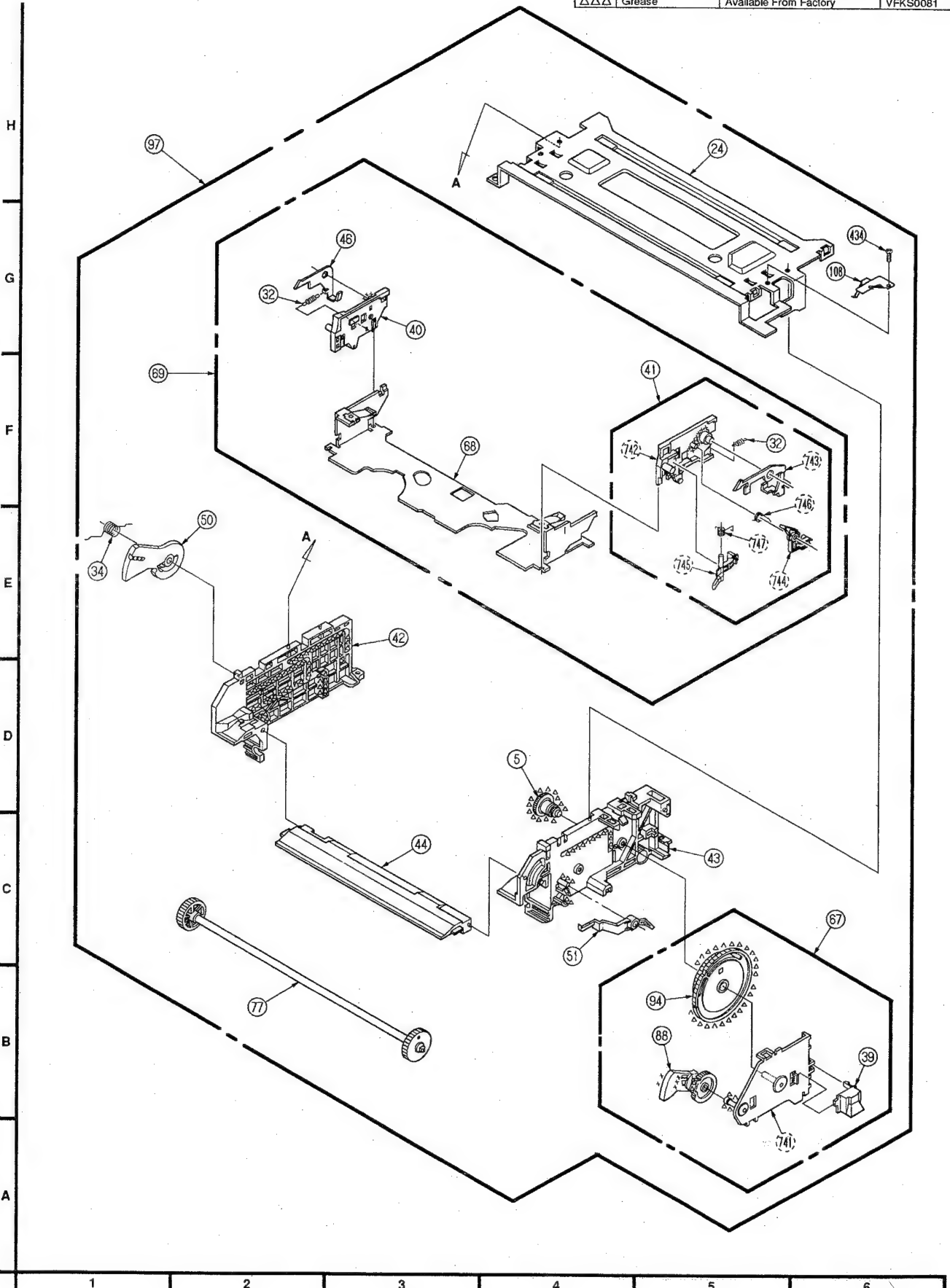


3 Cassette Up Mechanism Section

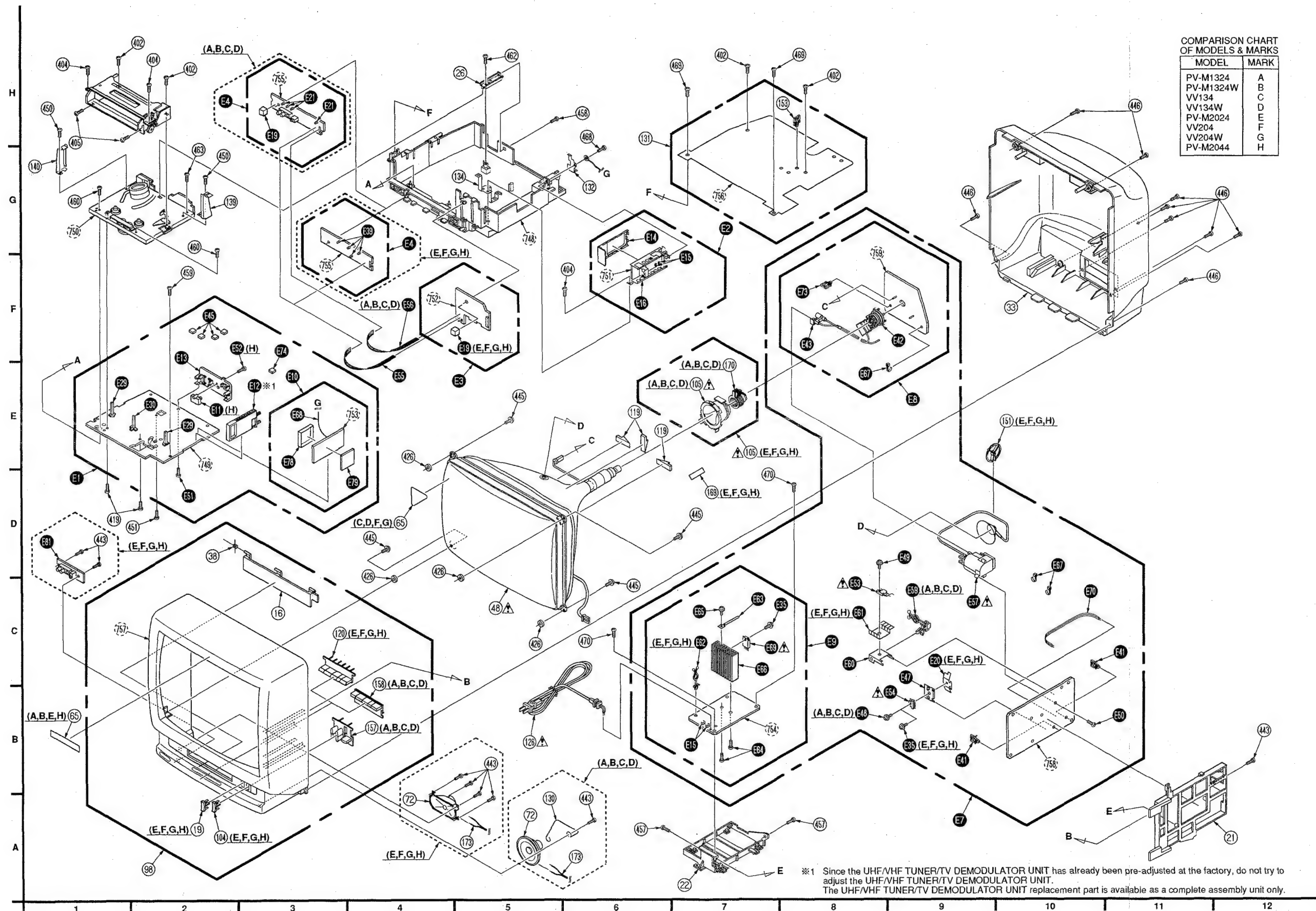
LUBRICATION POINTS

When the marked parts are replaced, apply the recommended Lubricants or adhesive for better maintenance of the unit.

Mark	Kind of Lubricant	Availability	Part Number
XXX	Molytone Grease	Available From Factory	MOR265
OOO	Spindle Oil	Purchase From Local Supplier	-----
AAA	Grease	Available From Factory	VFKS0081



4 Chassis Frame Section




5 Pack

COMPARISON CHART OF MODELS

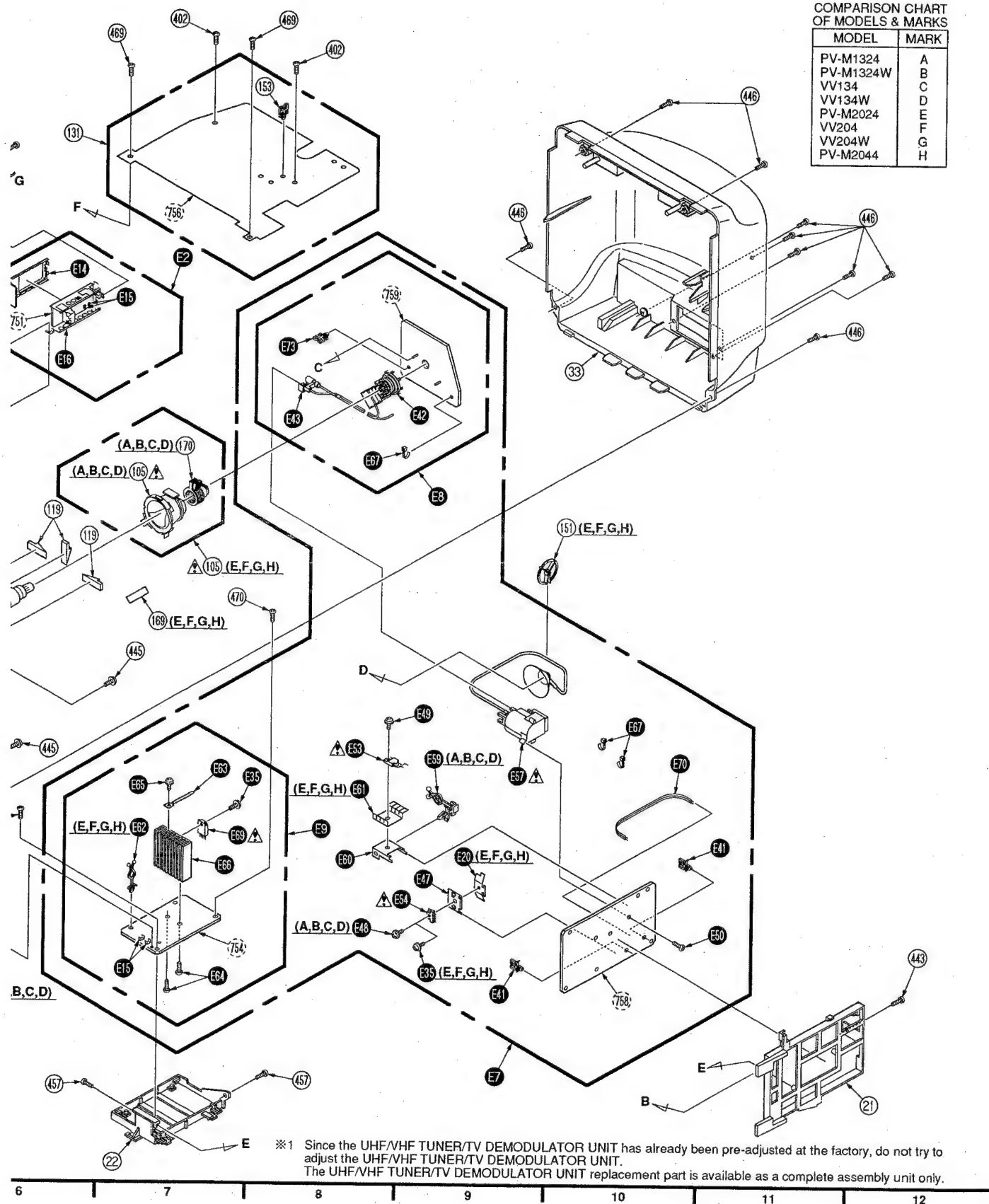
MODEL	MARK
PV-M1324	A
PV-M1324W	B
VV134	C
VV134W	D
PV-M2024	E
VV204	F
VV204W	G
PV-M2044	H

※2 The IR W/ Do not try

IMPORTANT SAFETY NOTICE:
THERE ARE SPECIAL COMPONENTS USED IN THIS EQUIPMENT WHICH ARE IMPORTANT FOR SAFETY. THESE PARTS ARE MARKED BY  IN THE SCHEMATIC DIAGRAMS AND REPLACEMENT PARTS LIST. IT IS ESSENTIAL THAT THESE CRITICAL PARTS SHOULD BE REPLACED WITH MANUFACTURER'S SPECIFIED PARTS TO PREVENT X-RADIATION, SHOCK, FIRE, OR OTHER HAZARDS. DO NOT MODIFY THE ORIGINAL DESIGN WITHOUT PERMISSION OF MANUFACTURER.

COMPARISON CHART OF MODELS & MARKS

MODEL	MARK
PV-M1324	A
PV-M1324W	B
VV134	C
VV134W	D
PV-M2024	E
VV204	F
VV204W	G
PV-M2044	H

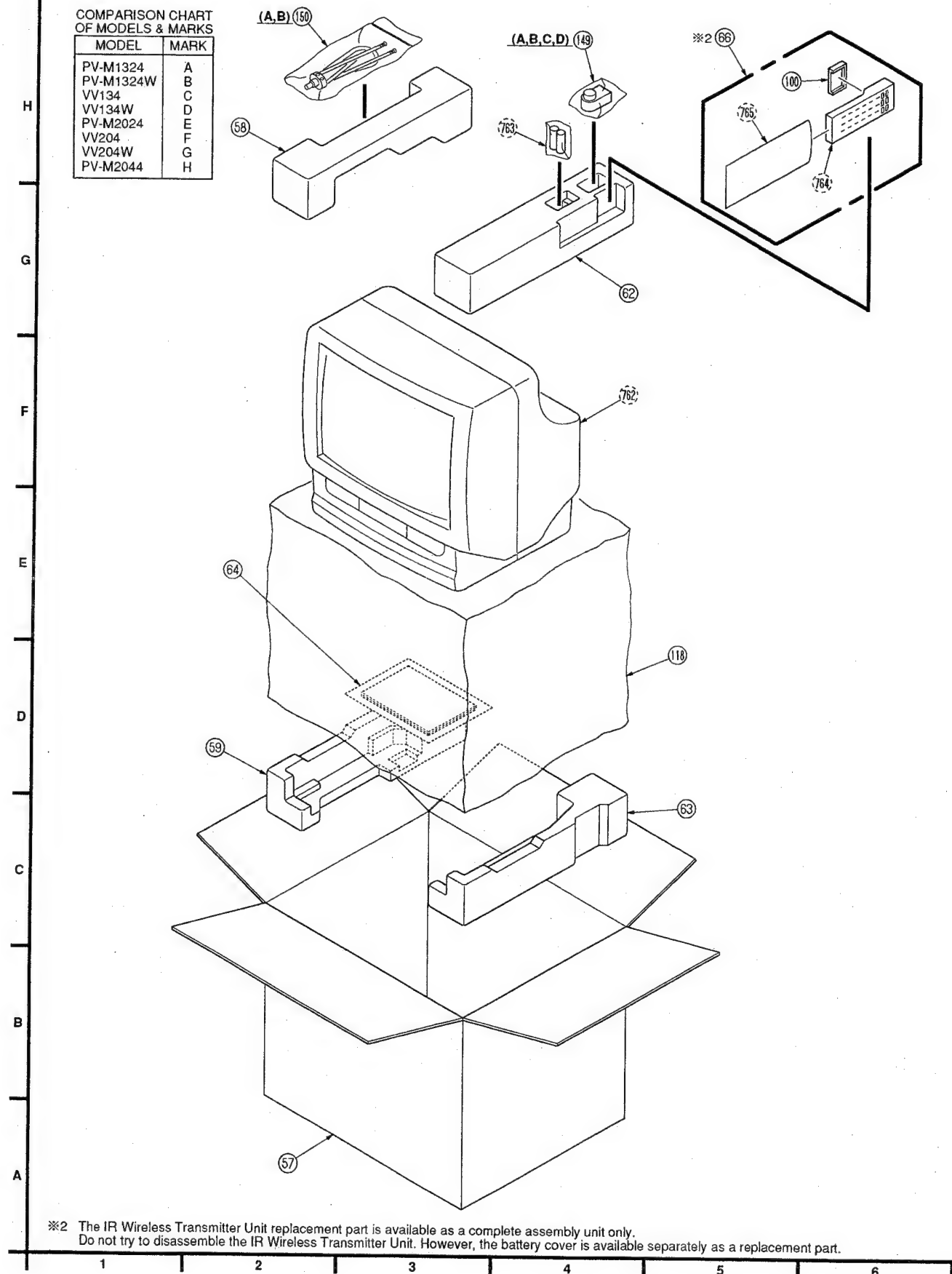


※1 Since the UHF/VHF TUNER/TV DEMODULATOR UNIT has already been pre-adjusted at the factory, do not try to adjust the UHF/VHF TUNER/TV DEMODULATOR UNIT. The UHF/VHF TUNER/TV DEMODULATOR UNIT replacement part is available as a complete assembly unit only.

5 Packing Parts and Accessories Section

COMPARISON CHART OF MODELS & MARKS

MODEL	MARK
PV-M1324	A
PV-M1324W	B
VV134	C
VV134W	D
PV-M2024	E
VV204	F
VV204W	G
PV-M2044	H



※2 The IR Wireless Transmitter Unit replacement part is available as a complete assembly unit only. Do not try to disassemble the IR Wireless Transmitter Unit. However, the battery cover is available separately as a replacement part.

VI. REPLACEMENT PARTS LIST

1. MECHANICAL REPLACEMENT PARTS LIST

USE ONLY ORIGINAL VIDEO REPLACEMENT PARTS : To maintain original FUNCTION and RELIABILITY of repaired units, use only ORIGINAL REPLACEMENT PARTS which are listed with their part numbers in the parts list section of the Service Manual.

Note :

- Be Sure to make your orders of replacement parts according to this list.
- IMPORTANT SAFETY NOTICE
Components identified by the sign Δ have special characteristics.
important for safety.
When replacing any of these components, use only the specified parts.

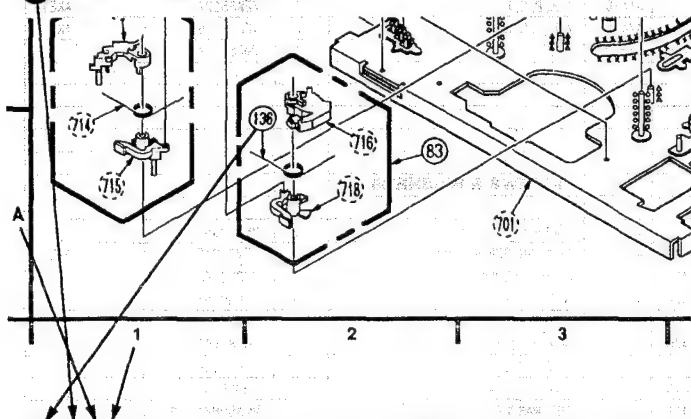
COMPARISON CHART OF MODELS & MARKS

MODEL	MARK	MODEL	MARK	MODEL	MARK
PV-M1324	A	PV-M1324W	B	VV134	C
VV134W	D	PV-M2024	E	VV204	F
VV204W	G	PV-M2044	H		

<The complete Exploded Views are shown in this manual.>

V. EXPLODED VIEWS

1 Transport Section



Item No.	Grid No.	Description	Pcs/Set	Part No.	Remark
MECHANISM PARTS ON CHASSIS					
1	1(C-3)	FE HEAD	1	VBSS0026	
2	2(F-2)	FG HEAD	1	VBKS0024	
3	2(G-6)	CAM GEAR	1	VDGS0400	
4	2(G-6)	LINK GEAR	1	VDGS0289	
5	3(D-4)	WORM WHEEL	1	VDGS0323	
6	1(E-6)	PINCH CAM	1	VDGS0294	
7	1(D-5)	P5 SECTOR GEAR	1	VDGS0296	
8	1(D-2)	P1 ROLLER	1	VDPS0210	
9	2(G-4)	LOADING MOTOR BELT	1	VDVS0069	
10	2(C-1)	CAPSTAN BELT	1	VDVS0070	
11		CYLINDER UNIT			
	1(H-3)	(A, B, C, D, E, F, G)	1	VEGS0370	
	1(H-3)	(H)	1	VEGS0372	
12	1(G-4)	A/C HEAD UNIT	1	VEHS0500	
13		UPPER CYLINDER UNIT			
	1(H-2)	(A, B, C, D, E, F, G)	1	VEHS0536	
	1(H-2)	(H)	1	VEHS0537	
14	2(E-1)	CAPSTAN STATOR UNIT	1	VEMS0237	
15	2(F-4)	LOADING MOTOR UNIT	1	VEMS0242	
16		CASSETTE DOOR			
	4(C-3)	(A)	1	TKK779559-2	AKEI
	4(C-3)	(B)	1	TKK779559-1	AKEI
	4(C-3)	(C)	1	TKK779559-3	AKEI
	4(C-3)	(D)	1	TKK779559-4	AKEI
	4(C-3)	(F)	1	TKK779557-2	AKEI
	4(C-3)	(G)	1	TKK779557-3	AKEI
		CASSETTE DOOR UNIT			
	4(C-3)	(E, H)	1	TXFKK01204P	AKEI
18	1(F-4)	GROUNDING PLATE	1	VBMS0962	
19		VOLUME BUTTON			
	4(A-2)	(E, F, H)	1	TBX7786102	AKEI
	4(A-2)	(G)	1	TBX7786103	AKEI
21	4(A-12)	PCB HOLDER -A	1	TMX77403	AKEI
22	4(A-7)	PCB HOLDER -B	1	TMX77404	AKEI
23	2(C-4)	P.C.B. BRACKET	1	VMAS1844	

Item No.	Grid No.	Description	Pcs/Set	Part No.	Remark
24	3(H-5)	TOP PLATE	1	VMAS1849	
25	1(A-6)	OPENER ANGLE	1	VMAS1854	
26	4(H-5)	CHASSIS ANGLE	1	TUX77803	
28	2(G-3)	ROD RETURN SPRING	1	VBMS0895	
29	2(G-2)	RELEASE PIECE SPRING	1	VBMS0896	
30	1(E-2)	TENSION SPRING	1	VBMS0898	
32	3(F-5)	SET LEVER SPRING	2	VBMS0901	
	3(G-2)				
33		BACK COVER			
	4(F-10)	(A, C)	1	TKU781501	AKEI
	4(F-10)	(B, D)	1	TKU781503	AKEI
	4(F-10)	(E, F, H)	1	TKU781601	AKEI
	4(F-10)	(G)	1	TKU781604	AKEI
34	3(E-1)	WIPER SPRING -L	1	VBMS0906	
36	1(B-1)	MAIN BRAKE SPRING	1	VBMS0910	
37	1(F-4)	ADJUST SPRING	3	VBMS0915	
38		CASSETTE DOOR SPRING			
	4(D-2)	(A, B, C, D)	1	TES7299	
	4(D-2)	(E, F, G, H)	1	TES7612	AKEI
39	3(B-6)	SENSOR COVER	1	VBMS0717	
40	3(G-3)	HOLDER GUIDE -L	1	VBMS0719	
41	3(F-5)	CASSETTE HOLDER GUIDE R UNIT	1	VXAS1545	
42	3(E-3)	SIDE PLATE -L	1	VBMS0722	
43	3(C-5)	SIDE PLATE -R	1	VBMS0723	
44	3(C-3)	CASSETTE GUIDE	1	VBMS0724	
45	1(G-3)	CYLINDER BASE	1	VBMS0925	
46	3(G-3)	SET LEVER -L	1	VMS0785	
48		PICTURE TUBE SUB ASS'Y			
	4(C-5)	(A, B, C, D)	1	TXFB02134E	AKEI
	4(C-5)	(E, F, G, H)	1	TXFB02204E	AKEI
50	3(E-2)	WIPER ARM -L	1	VMS0790	
51	3(C-4)	CASSETTE LEVER	1	VMS0960	
52	2(E-1)	SUB PLATE	1	VMAS1470	
53	2(A-2)	CASSETTE DOWN DETECT PIECE	1	VBMS0077	
54	2(F-3)	MAIN ROD	1	VBMS0078	
55	1(F-6)	PINCH CAM CAP	1	VBMS0782	
57		PACKING CASE			
	5(A-2)	(A)	1	TPC7810408	AKEI
	5(A-2)	(B)	1	TPC7810409	AKEI
	5(A-2)	(C)	1	TPC7810410	AKEI
	5(A-2)	(D)	1	TPC7810411	AKEI
	5(A-2)	(E)	1	TPC781622	AKEI
	5(A-2)	(F)	1	TPC781624	AKEI
	5(A-2)	(G)	1	TPC781625	AKEI
	5(A-2)	(H)	1	TPC781623	AKEI
58		LEFT CUSHION -TOP			
	5(H-2)	(A, B, C, D)	1	TPD971032	AKEI
	5(H-2)	(E, F, G, H)	1	TPD971036	AKEI
59		LEFT CUSHION -BOTTOM			
	5(D-2)	(A, B, C, D)	1	TPD972032	AKEI
	5(D-2)	(E, F, G, H)	1	TPD972036	AKEI
60	1(F-6)	PRESSURE ROLLER SPRING	1	VBMS0702	
61	1(E-6)	PRESSURE ROLLER ARM SPRING	1	VBMS0590	
62		RIGHT CUSHION -TOP			
	5(G-4)	(A, B, C, D)	1	TPD971031	AKEI
	5(G-4)	(E, F, G, H)	1	TPD971035	AKEI
63		RIGHT CUSHION -BOTTOM			
	5(C-5)	(A, B, C, D)	1	TPD972031	AKEI
	5(C-5)	(E, F, G, H)	1	TPD972035	AKEI
64		FAN BAG			
	5(E-2)	(A, B)	1	VQFS3003	AKEI
	5(E-2)	(C, D)	1	VQFS3007	AKEI
	5(E-2)	(E, H)	1	VQFS3004	AKEI
	5(E-2)	(F, G)	1	VQFS3008	AKEI
65		STICKER			
	4(B-2)	(A, B)	1	TOF77186	
	4(D-4)	(C, D)	1	TOF77189	AKEI
	4(B-2)	(E, H)	1	TOF77185	
	4(D-4)	(F, G)	1	TOF77187	AKEI
66		IR WIRELESS TRANSMITTER UNIT			
	5(H-5)	(A, E)	1	VSQS1370	
	5(H-5)	(B)	1	VSQS1372	
	5(H-5)	(C, D, F, G)	1	VSQS1373	
	5(H-5)	(H)	1	VSQS1377	
67	3(C-6)	SUB PLATE ASS'Y	1	VXAS1531	

Item No.	Grid No.	Description	Pcs/ Set	Part No.	Remark
68	3(F-3)	CASSETTE HOLDER UNIT	1	VXAS1532	
69	3(F-1)	CASSETTE HOLDER ASS'Y	1	VXAS1534	
70	2(C-5)	EARTH PLATE UNIT	1	VXBS0042	
71	1(D-4)	CAPSTAN HOLDER UNIT	1	VXDS0128	
72		SPEAKER			
	4(A-5)	(A, B, C, D)	1	USP65306	
	4(A-4)	(E, F, G, H)	1	EASG9D540A2	
73	1(D-4)	LOADING POST S ASS'Y	1	VXDS0129	
74	1(C-5)	LOADING POST T ASS'Y	1	VXDS0130	
75	1(C-5)	LOADING POST BASE T UNIT	1	VXDS0133	
76	1(C-4)	LOADING POST BASE S UNIT	1	VXDS0134	
77	3(B-2)	MAIN SHAFT UNIT	1	VXJS0052	
78	1(C-1)	CENTER BLOCK UNIT	1	VXKS0674	
79	2(H-4)	MOTOR BLOCK ASS'Y	1	VXKS0755	
80	1(F-5)	PRESSURE ROLLER ARM UNIT	1	VXLS0836	
81	1(F-2)	TENSION ARM UNIT	1	VXLS0838	
82	1(B-1)	BRAKE S UNIT	1	VXLS0843	
83	1(A-2)	BRAKE T UNIT	1	VXLS0846	
84	1(A-5)	CAM FOLLOWER ARM UNIT	1	VXLS0848	
85	2(E-5)	LOADING ARM T UNIT	1	VXLS0850	
86	2(B-6)	LOADING ARM S UNIT	1	VXLS0852	
87	1(B-6)	P5 ARM UNIT	1	VXLS0853	
88	3(B-5)	WIPER ARM R UNIT	1	VXLS0856	
89	2(H-3)	SECONDARY ROD UNIT	1	VXLS0917	
90	2(G-1)	CAPSTAN ROTOR UNIT	1	VXPS0301	
91	1(C-5)	ROLLER POST UNIT	2	VXPS0302	
	1(D-4)				
92	2(B-1)	CLUTCH UNIT	1	VXPS0303	
93	2(G-4)	WORM UNIT	1	VXPS0309	
94	3(B-5)	GENEVA GEAR UNIT	1	VXPS0310	
95	1(D-3)	SUPPLY REEL TABLE UNIT	1	VXRS0061	
96	1(E-3)	TAKEUP REEL TABLE UNIT	1	VXRS0062	
97	3(H-1)	CASSETTE UP ASS'Y	1	VXYS0894	
98		CABINET ASS'Y			
	4(A-2)	(A)	1	TXFKY01134EP	AKEI
	4(A-2)	(B)	1	TXFKY11134EPW	AKEI
	4(A-2)	(C)	1	TXFKY01134EQ	AKEI
	4(A-2)	(D)	1	TXFKY11134EQW	AKEI
	4(A-2)	(E)	1	TXFKY01204EP	AKEI
	4(A-2)	(F)	1	TXFKY01204EQ	AKEI
	4(A-2)	(G)	1	TXFKY1204EQW	AKEI
	4(A-2)	(H)	1	TXFKY1204EGP	AKEI
99	2(G-4)	WORM SHAFT SUPPORT	1	VDBS0247	
100		BATTERY COVER			
	5(H-5)	(A, C, D, E, F, G, H)	1	VKFS1073	
	5(H-5)	(B)	1	VKFS1104	
104		CHANNEL BUTTON			
	4(A-2)	(E, F, H)	1	TBX7786002	AKEI
	4(A-2)	(G)	1	TBX7786003	AKEI
105		DEFLECTION YOKE			
	4(E-7) Δ	(A, B, C, D)	1	TLY26389F	AKEI
	Δ			OR TLY26389S	AKEI
	4(E-7) Δ	(E, F, G, H)	1	TLY26351F1	AKEI
	Δ			OR TLY26390S	AKEI
107	1(A-6)	GROUNDING SPRING	1	WMBS0959	
108	3(G-6)	GROUNDING PLATE	1	WMC00061	
112	1(D-4)	DUST SEAL	2	WMS0511	
118		POLYETHYLENE BAG			
	5(D-5)	(A, B, C, D)	1	TPE744031	AKEI
	5(D-5)	(E, F, G, H)	1	TPE744035	AKEI
119	4(E-6)	DY ADJUSTMENT RUBBER	3	TMM77531	
120		OPERATION BUTTON			
	4(C-3)	(E)	1	TBX7786301	AKEI
	4(C-3)	(F)	1	TBX7786303	AKEI
	4(C-3)	(G)	1	TBX7786304	AKEI
	4(C-3)	(H)	1	TBX7786302	AKEI
126		A/C CORD			
	4(B-5) Δ	(A, C, D, E, F, G, H)	1	TSX7134	
	Δ			OR TSX7134-F	AKEI
	Δ			OR TSX7134-K	
	4(B-5) Δ	(B)	1	TSX7145	AKEI
130		SPEAKER SPRING			
	4(A-5)	(A, B, C, D)	1	TES7368-1	
131		TOP SHIELD PLATE ASS'Y			
	4(H-6)	(A, B, C, D)	1	TXFUC01134	AKEI
	4(H-6)	(E, F, G, H)	1	TXFUC01204	AKEI
132	4(G-6)	POWER SUPPLY ASS'Y ANGLE	1	TUX77807	AKEI
134	4(G-5)	POWER EARTH PLATE	1	TUX77808	
136	1(A-2)	SOFT SPRING -T-	1	WMBS0912	
139	4(G-2)	SUPPORT ANGLE -R	1	VMAS2057	

[illegible]

* THIS CUT WASHER IS NOT REUSABLE. IF REMOVED, INSTALL A NEW ONE.

[illegible]

2. ELECTRICAL REPLACEMENT PARTS LIST

(E8, E9, E29, E30)

USE ONLY ORIGINAL VIDEO REPLACEMENT PARTS : To maintain original FUNCTION and RELIABILITY of repaired units, use only ORIGINAL REPLACEMENT PARTS which are listed with their part numbers in the parts list section of the Service Manual.

Special Note :

All integrated circuits and many other semiconductor devices are electrostatically sensitive and therefore require the special handling techniques described under the "Electrostatically Sensitive (ES) Devices" section of this service manual.

Note :

- Be sure to make your orders of replacement parts according to this list.
- IMPORTANT SAFETY NOTICE**
Components identified by the sign Δ have special characteristics important for safety.
When replacing any of these components, use only the specified parts.
- Unless otherwise specified :
All resistors are in OHMS (Ω), $\frac{1}{4}W$, $\pm 5\%$, carbon, $K=1,000\Omega$, $M=1,000K\Omega$.
All capacitors are in MICROFARADS (μF), $P=\mu F$, $\pm 10\%$.
All coils are in MICROHENRIES (μH), $M=10^3\mu H$, $\pm 10\%$.
- C.B.A. : Circuit Board Assembly.
- P.C.B. : Printed Circuit Board.
- E.S.D. : Electrostatically Sensitive Devices.
- ITEM NUMBERS WITH CAPITAL LETTER E
Item numbers with capital letter E (Example: E1, E2, ...) in the Ref. No. column are shown in the exploded views.
The E item numbers are also printed on the same page at the top of the column.
- The parts with \blacksquare are assembly parts or units.
The parts with Δ are assembly parts or units which belong to parts with \blacksquare right above them in the printed circuit board assembly & unit list.
- SERVICE OF CHIP PARTS**
When servicing chip parts, please use a soldering iron of less than 30 watts.
Refer to IC, Transistor and Chip Part Information page.
- List of Abbreviations for Part Names & Descriptions :
MGF CHIP : METAL GLAZE FILM CHIP
C CHIP : CERAMIC CHIP
COMPLX CMP : COMPLEX COMPONENT
W FLMPRF : WIREWOUND FLAMEPROOF
- The parts with \bullet are 0 OHM resistor. When replacing, a wire can be substituted for a 0 OHM resistor.
- Parts different in shape or size may be used.
However, only interchangeable parts will be supplied as service replacement parts.

COMPARISON CHART OF MODELS & MARKS

MODEL	MARK	MODEL	MARK	MODEL	MARK
PV-M1324	A	PV-M1324W	B	VV134	C
VV134W	D	PV-M2024	E	VV204	F
VV204W	G	PV-M2044	H		

(E1, E2, E3, E4, E5, E6, E7, E10, E81)

Ref. No.	Part No.	Part Name & Description	Pcs/Set	Remarks
		PRINTED CIRCUIT BOARD ASSEMBLY		
E1	\blacksquare VEPS02223A1	MAIN C.B.A.	1	E.S.D. (RTL)
	(A, B, C, D)			
E1	\blacksquare VEPS02223B1	MAIN C.B.A.		E.S.D. (RTL)
	(E, F, G)			
E1	\blacksquare VEPS02223C1	MAIN C.B.A.		E.S.D. (RTL)
	(H)			
E10	Δ VEPS03125C2	CCV C.B.A.	1	E.S.D. (RTL)
E2	\blacksquare VEPS01039A1	POWER SUPPLY ASS'Y	1	(RTL)
E3	\blacksquare VEPS07571A1	OPERATION I C.B.A.	1	(RTL)
	(A, B, C, D)			
E3	\blacksquare VEPS07573A1	OPERATION I C.B.A.		(RTL)
	(E, F, G, H)			
E4	\blacksquare VEPS07572A1	OPERATION II C.B.A.	1	(RTL)
	(A, B, C, D)			
E4	\blacksquare VEPS07574A1	OPERATION II C.B.A.		(RTL)
	(E, F, G, H)			
E81	\blacksquare VEPS04117A1	AUDIO/VIDEO JACK C.B.A.	1	(RTL)
	(E, F, G, H)			
E5	\blacksquare VEPS02178A1	CAPSTAN MOTOR DRIVE C.B.A.	1	(RTL)
E6	\blacksquare VEPS0563CA1	HEAD AMP ASS'Y	1	(RTL)
	(A, B, C, D, E, F, G)			
E6	\blacksquare VEPS0564CA1	HEAD AMP ASS'Y		(RTL)
	(H)			
E7	\blacksquare TNP71920CC	TV MAIN C.B.A.	1	(RTL)AKEI
	(A, B, C, D)			
E7	\blacksquare TNP71922CC	TV MAIN C.B.A.		(RTL)AKEI
	(E, F, G, H)			

Ref. No.	Part No.	Part Name & Description	Pcs/Set	Remarks
E8	Δ TNP73135AA	CRT C.B.A.	1	(RTL)AKEI
	(A, B, C, D)			
E8	Δ TNP73139AA	CRT C.B.A.		(RTL)AKEI
	(E, F, G, H)			
E9	Δ TNP73136BB	TV POWER C.B.A.	1	(RTL)AKEI
	(A, B, C, D)			
E9	Δ TNP73140BB	TV POWER C.B.A.		(RTL)AKEI
	(E, F, G, H)			
		MAIN C.B.A.		
		INTEGRATED CIRCUITS		
IC3001	AN3458FBP	IC BIPOLAR LINEAR VIDEO/AUDIO PROCESS	1	
IC3201	MN3870S	IC MOS LOGIC CCD 1H DELAY	1	E.S.D.
IC3301	LC7472HM9056	IC MOS LOGIC CHARACTER GENERATOR	1	E.S.D.
IC4151	AN5265	IC BIPOLAR LINEAR TV SOUND OUT	1	
IC6001	MN6750245V5Y	IC MOS LOGIC SYSTEM CTL/SERVO	1	E.S.D.
IC6003	XRA6418N	IC BIPOLAR LINEAR LOADING MOTOR DRIVE	1	
IC6004	VEK55202	REEL SENSOR UNIT	1	
IC6201	AN1358S	IC BIPOLAR LINEAR OP AMP	1	
IC7501	MN187244V9G	IC MOS LOGIC TIMER/DISPLAY DRIVE	1	E.S.D.
IC7502	MN1280-L	IC MOS LOGIC RESET SIGNAL OUT	1	E.S.D.
IC7505	UPD6326C	IC MOS LOGIC D/A CONVERTER	1	E.S.D.
		TRANSISTORS		
Q1201	Δ 2SC3852		1	
	Δ OR 2SD1776 (P, O)			
	Δ OR 2SD2375 (P, O)			
Q1202	2SD601 (O)	CHIP	1	
Q3001, 3002	2SD601 (R)	CHIP	2	
Q3003	2SB709 (R)	CHIP	1	
	(A, B, C, D, E, F, G)			
Q3004	UN2113	CHIP	1	
Q3005	2SB709 (R)	CHIP	1	
Q3301	2SD601 (R)	CHIP	1	
Q3601	2SB709 (R)	CHIP	1	
	(H)			
Q4001	2SB709A (O)	CHIP	1	
Q4002, 4003	2SD601A (R)	CHIP	2	
Q4101	2SD601 (O)	CHIP	1	
Q6001 (E29)	VEK55200	PHOTO SENSOR UNIT	1	
Q6002 (E29)	VEK55200	PHOTO SENSOR UNIT	1	
Q6003	2SD601 (O)	CHIP	1	
Q6004	2SB709 (O)	CHIP	1	
Q6005	UN2212	CHIP	1	
Q6006	2SB709 (O)	CHIP	1	
Q6007	RN4601	COMPLEX COMPONENT S1 NPN/PNP	1	
		CHIP		
Q6201	2SB709 (O)	CHIP	1	
Q7002	2SD601 (O)	CHIP	1	
Q7502, 7503	2SD601 (O)	CHIP	2	
		DIODES		
D1201	MA4100N	ZENER	10V	1
D1202-1204	WG713A			3
D3001-3005	MA165			5
D3006	MA165			1
	(A, B, C, D, E, F, G)			
D3007, 3008	MA4091-M	ZENER	9.1V	2
D3602	MA4130-M	ZENER	13V	1
	(H)			
D3603	MA165			1
	(H)			
D4001	WG713A			1
D6001 (E30)	VEK55201	SENSOR LED UNIT		1
D6002, 6003	WG713A			2
D6201-6204	WG713A			4
D6205	WG713A			1
	(H)			
D7001	WG713A			1
D7002, 7003	MA4160-M	ZENER	16V	2
D7004	MA4130-M	ZENER	13V	1

Ref. No.	Part No.	Part Name & Description	Pcs/Set	Remarks
D7005	MA4052-H	ZENER 6.2V	1	
D7534	MA4051-M	ZENER 5.1V	1	
		RESISTORS		
R1201	ERD21LLJ472	CHIP 1/8W 4.7K	1	
R1202	ERDS2TJ153	15K	1	
R1204	ERDS2TJ153	15K	1	
R1209	ERQ12HJ1R0P	FUSE 1/2W	1	
R1210	ERDS2TJ222	2.2K	1	
R3003	EYNDXAA03B13	VARIABLE 1K	1	
R3004	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	1	
R3005, 3006	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	2	
R3007	ERJ6GEYJ222V	MGF CHIP 1/10W 2.2K	1	
R3008	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	1	
R3009	ERJ6GEYJ222V	MGF CHIP 1/10W 2.2K	1	
R3010, 3011	EYNDXAA03B24	VARIABLE 20K	2	
R3012	ERJ6GEYJ182V	MGF CHIP 1/10W 1.8K	1	
R3013	ERJ6GEYJ151V	MGF CHIP 1/10W 150	1	
R3014	EYNDXAA03B24	VARIABLE 20K	1	
R3015	EYNDXAA03B13	VARIABLE 1K	1	
R3016	ERJ6GEYJ473V	MGF CHIP 1/10W 47K	1	
R3017	ERJ6GEYJ394V	MGF CHIP 1/10W 390K	1	
R3018	ERJ6GEYJ473V	MGF CHIP 1/10W 47K	1	
R3019, 3020	ERJ6GEYJ223V	MGF CHIP 1/10W 22K	2	
R3021	ERJ6GEYJ391V	MGF CHIP 1/10W 390	1	
R3022, 3023	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	2	
R3024	ERJ6GEYJ391V	MGF CHIP 1/10W 390	1	
R3025	ERJ6GEYJ221V	MGF CHIP 1/10W 220	1	
	(A, B, C, D, E, F, G)			
	ERJ6GEYJ391V	MGF CHIP 1/10W 390		
	(H)			
R3026	ERJ6GEYJ824V	MGF CHIP 1/10W 820K	1	
R3027	ERJ6GEYJ332V	MGF CHIP 1/10W 3.3K	1	
R3028	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	1	
R3029	ERJ6GEYJ474V	MGF CHIP 1/10W 470K	1	
R3030	ERJ6GEYJ155V	MGF CHIP 1/10W 1.5M	1	
R3031	ERJ6GEYJ391V	MGF CHIP 1/10W 390	1	
R3032	ERJ6GEYJ392V	MGF CHIP 1/10W 3.9K	1	
R3033	ERJ6GEYJ472V	MGF CHIP 1/10W 4.7K	1	
R3034	ERJ6GEYJ123V	MGF CHIP 1/10W 12K	1	
R3035	ERJ6GEYJ822V	MGF CHIP 1/10W 8.2K	1	
R3036	ERJ6GEYJ273V	MGF CHIP 1/10W 27K	1	
R3037	ERD21LLJ273	CHIP 1/8W 27K	1	
R3038, 3039	ERJ6GEYJ152V	MGF CHIP 1/10W 1.5K	2	
R3040	ERJ6GEYJ391V	MGF CHIP 1/10W 390	1	
R3041	EYNDXAA03B24	VARIABLE 20K	1	
R3042	ERDS2TJ393	39K	1	
	(A, B, C, D, E, F, G)			
R3043	ERJ6GEYJ393V	MGF CHIP 1/10W 39K	1	
	(A, B, C, D, E, F, G)			
R3044	ERJ6GEYJ225V	MGF CHIP 1/10W 2.2M	1	
R3045, 3046	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	2	
R3047	ERJ6GEYJ562V	MGF CHIP 1/10W 5.6K	1	
R3048	ERJ6GEYJ472V	MGF CHIP 1/10W 4.7K	1	
R3049	ERJ6GEYJ122V	MGF CHIP 1/10W 1.2K	1	
R3050	ERJ6GEYJ472V	MGF CHIP +-2% 1/10W 4.7K	1	
R3051	ERJ6GEYJ223V	MGF CHIP 1/10W 22K	1	
R3052	ERD21LLJ103	CHIP 1/8W 10K	1	
	(A, B, C, D, E, F, G)			
R3053, 3054	ERJ6GEYJ333V	MGF CHIP 1/10W 33K	2	
R3055	ERJ6GEYJ561V	MGF CHIP 1/10W 560	1	
R3056	ERDS2TJ101	100	1	
R3057	ERJ6GEYJ331V	MGF CHIP 1/10W 330	1	
R3058	ERJ6GEYJ824V	MGF CHIP 1/10W 820K	1	
R3059	ERJ6GEYJ183V	MGF CHIP 1/10W 18K	1	
R3060	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	1	
	(A, B, C, D, E, F, G)			
R3061	ERJ6GEYJ271V	MGF CHIP 1/10W 270	1	
R3062	ERJ6GEYJ683V	MGF CHIP 1/10W 68K	1	
R3063	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	1	
R3066	ERJ6GEYJ822V	MGF CHIP 1/10W 8.2K	1	
R3201	ERJ6GEYJ821V	MGF CHIP 1/10W 820	1	
R3202	ERJ6GEYOR00V	MGF CHIP 1/10W 0	1	
R3203	ERJ6GEYJ225V	MGF CHIP 1/10W 2.2M	1	
R3301	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	1	
R3302	ERJ6GEYJ101V	MGF CHIP 1/10W 100	1	
R3303	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	1	
R3304-3306	ERJ6GEYJ222V	MGF CHIP 1/10W 2.2K	3	
R3307, 3308	ERJ6GEYJ563V	MGF CHIP 1/10W 56K	2	

Ref. No.	Part No.	Part Name & Description	Pcs/Set	Remarks
R3601	ERJ6GEYJ331V	MGF CHIP 1/10W 330	1	
	(H)			
R3602	ERJ6GEYJ271V	MGF CHIP 1/10W 270	1	
	(H)			
R3603	ERJ6GEYJ680V	MGF CHIP 1/10W 68	1	
	(H)			
R3604	ERJ6GEYOR00V	MGF CHIP 1/10W 0	1	
	(A, B, C, D, E, F, G)			
	ERD21LLJ183	CHIP 1/8W 18K		
	(H)			
R4001	ERD21LLJ103	CHIP 1/8W 10K	1	
R4002	ERD21LLJ334	CHIP 1/8W 330K	1	
R4003	ERD21LLJ221	CHIP 1/8W 220	1	
R4004	ERD21LLJ333	CHIP 1/8W 33K	1	
R4005	ERD21LLJ225	CHIP 1/8W 2.2M	1	
R4006	ERD21LLJ681	CHIP 1/8W 680	1	
R4007	ERD21LLJ821	CHIP 1/8W 820	1	
R4008	ERJ6GEYG183Z	MGF CHIP +-2% 1/10W 18K	1	
R4009	ERD21LLJ473	CHIP 1/8W 47K	1	
R4010	ERD21LL0	CHIP 1/8W 0	1	
R4011	ERD21LLJ682	CHIP 1/8W 6.8K	1	
R4012	ERD21LLJ223	CHIP 1/8W 22K	1	
R4013	ERD21LLJ473	CHIP 1/8W 47K	1	
R4014, 4015	ERD21LLJ472	CHIP 1/8W 4.7K	2	
R4016	ERD21LLJ473	CHIP 1/8W 47K	1	
R4018	ERD21LLJ562	CHIP 1/8W 5.6K	1	
R4019	ERD21LLJ123	CHIP 1/8W 12K	1	
R4020, 4021	ERDS2TJ473	47K	2	
R4030	ERD21LLJ393	CHIP 1/8W 39K	1	
R4031	ERD21LLJ561	CHIP 1/8W 560	1	
R4101	ERD21LLJ154	CHIP 1/8W 150K	1	
R4102	ERJ6GEYG473Z	MGF CHIP +-2% 1/10W 47K	1	
R4103	ERD21LLJ153	CHIP 1/8W 15K	1	
R4151	ERD21LLJ561	CHIP 1/8W 560	1	
R4152	ERDS2TJ221	220	1	
R4153	ERD21LLJ823	CHIP 1/8W 82K	1	
R4155	ERD21LLJ392	CHIP 1/8W 3.9K	1	
	(A, B, C, D)			
	ERD21LLJ182	CHIP 1/8W 1.8K		
	(E, F, G, H)			
R4156	ERX1S9R1P	METAL OXIDE 1W 8.1	1	
R4157, 4158	ERD21LLJ103	CHIP 1/8W 10K	2	
R4159	ERDS2TJ100	10	1	
R4160	ERD21LLJ561	CHIP 1/8W 560	1	
	(A, B, C, D)			
	ERD21LLJ391	CHIP 1/8W 390		
	(E, F, G, H)			
R4161	ERD21LLJ392	CHIP 1/8W 3.9K	1	
R6002	ERD21LLJ223	CHIP 1/8W 22K	1	
R6003-6005	ERD21LLJ563	CHIP 1/8W 56K	3	
R6006-6008	ERD21LLJ102	CHIP 1/8W 1K	3	
R6009	ERD21LLJ222	CHIP 1/8W 2.2K	1	
R6010, 6011	ERD21LLJ221	CHIP 1/8W 220	2	
R6015	ERD21LLJ332	CHIP 1/8W 3.3K	1	
R6018, 6019	ERD21LLJ102	CHIP 1/8W 1K	2	
R6021	ERD21LLJ102	CHIP 1/8W 1K	1	
R6022, 6023	ERD21LLJ221	CHIP 1/8W 220	2	
R6025	ERD21LLJ272	CHIP 1/8W 2.7K	1	
R6028	ERD21LLJ223	CHIP 1/8W 22K	1	
R6029	ERD21LLJ272	CHIP 1/8W 2.7K	1	
R6032	ERD21LLJ224	CHIP 1/8W 220K	1	
R6033, 6034	ERD21LLJ153	CHIP 1/8W 15K	2	
	(H)			
R6035	ERD21LLJ223	CHIP 1/8W 22K	1	
	(H)			
R6036-6049	ERD21LLJ223	CHIP 1/8W 22K	14	
R6050	ERD21LLJ223	CHIP 1/8W 22K	1	
	(A, B, C, D, E, F, G)			
R6051	ERD21LLJ223	CHIP 1/8W 22K	1	
R6052	ERD21LLJ103	CHIP 1/8W 10K	1	
R6053	ERD21LLJ102	CHIP 1/8W 1K	1	
R6054	ERD21LLJ103	CHIP 1/8W 10K	1	
R6055	ERD21LLJ102	CHIP 1/8W 1K	1	
R6056, 6057	ERD21LLJ103	CHIP 1/8W 10K	2	
R6058	ERD21LLJ683	CHIP 1/8W 68K	1	
R6059	ERD21LLJ223	CHIP 1/8W 22K	1	
R6062	ERD21LLJ473	CHIP 1/8W 47K	1	
R6063	ERD21LLJ683	CHIP 1/8W 68K	1	
R6066	ERDS2TJ821	820	1	
R6069-6071	ERDS2TJ471	470	3	

(E13, E45, E51, E52, E74)

Ref. No.	Part No.	Part Name & Description	Pcs/Set	Remarks
E51	VHDS0276	SCREW 3X10	1	
E45	VMTS0035	CUSHION	4	
E74	VMTS0094	CUSHION	1	
E13	VGPS2943	ANT TERMINAL PLATE	1	
	(A, B, C, D, E, F, G)			
E13	VGPS2941	ANT TERMINAL PLATE		
	(H)			
E52	VHDS0319	SCREW 3X12	1	
	(H)			
	▲	CCV C.B.A.		
		INTEGRATED CIRCUITS		
IC8501	MC144143P1	IC MOS LOGIC CCV	1	E. S. D.
IC8503	NJM2235M	IC BIPOLAR LINEAR VIDEO INPUT	1	
		SW		
		TRANSISTORS		
Q8501	2SD601 (Q, R, S)	CHIP	1	
Q8505	2SD601 (Q, R, S)	CHIP	1	
		DIODES		
D8500	WG713A		1	
D8504, 8505	WG713A		2	
		RESISTORS		
R8500	ERD21LLJ103	CHIP 1/8W 10K	1	
R8502, 8503	ERD21LLJ102	CHIP 1/8W 1K	2	
R8505	ERD21LLJ102	CHIP 1/8W 1K	1	
R8507	ERD21LLJ103	CHIP 1/8W 10K	1	
R8508	ERD21LLJ472	CHIP 1/8W 4.7K	1	
R8509, 8510	ERD21LLJ122	CHIP 1/8W 1.2K	2	
R8512	ERD21LLJ101	CHIP 1/8W 100	1	
R8516	ERD21LLJ101	CHIP 1/8W 100	1	
R8517	ERD21LLJ471	CHIP 1/8W 470	1	
R8518	ERD21LLJ561	CHIP 1/8W 560	1	
R8519	ERD21LLJ471	CHIP 1/8W 470	1	
R8537	ERD21LLJ684	CHIP 1/8W 680K	1	
R8539	ERD21LLJ222	CHIP 1/8W 2.2K	1	
R8540	ERD21LLJ152	CHIP 1/8W 1.5K	1	
R8541	ERD21LLJ392	CHIP 1/8W 3.9K	1	
R8543	ERD21LLJ182	CHIP 1/8W 1.8K	1	
R8544, 8545	ERD21LL0	CHIP 1/8W 0	2	
R8546	ERD21LLJ182	CHIP 1/8W 1.8K	1	
R8547	ERD21LLJ102	CHIP 1/8W 1K	1	
R8549	ERD21LLJ474	CHIP 1/8W 470K	1	
R8550	ERD21LLJ101	CHIP 1/8W 100	1	
R8551	ERD21LLJ471	CHIP 1/8W 470	1	
		CAPACITORS		
C8500	ECEA1EK4R7	ELECTROLYTIC 25V 4.7	1	
C8503	ECQV1H224JM	POLYESTER +-5% 50V 0.22	1	
C8504, 8505	ECUZ1H101JCN	C CHIP +-5% 50V 1.00P	2	
C8507	ECUZ1E104ZFN	C CHIP +80%-20% 25V 0.1	1	
C8508	ECUZ1H103KBN	C CHIP 50V 0.01	1	
C8511	ECUZ1E104ZFN	C CHIP +80%-20% 25V 0.1	1	
C8512	ECUZ1H561KBN	C CHIP 50V 560P	1	
C8513	ECUZ1H103ZFN	C CHIP +80%-20% 50V 0.01	1	
C8514	ECEA0JK470	ELECTROLYTIC 6.3V 47	1	
C8531	ECEA1HK2R2	ELECTROLYTIC 50V 2.2	1	
C8532	ECUZ1H103ZFN	C CHIP +80%-20% 50V 0.01	1	
C8533	ECEA0JK470	ELECTROLYTIC 6.3V 47	1	
C8534	ECEA1HK2R2	ELECTROLYTIC 50V 2.2	1	
C8537	ECEA1HK2R2	ELECTROLYTIC 50V 2.2	1	
C8538	ECUZ1E104ZFN	C CHIP +80%-20% 25V 0.1	1	
		FILTERS		
FL8501, 8502	VLFSAR1H330	COMPLEX COMPONENT 50V 33P	2	
FL8503	VLFSAR1H331	COMPLEX COMPONENT 50V 330P	1	
FL8504	VLFSAR1H330	COMPLEX COMPONENT 50V 33P	1	
FL8505-8507	VLFSAR1H331	COMPLEX COMPONENT 50V 330P	3	

(E68, E78, E79)

Ref. No.	Part No.	Part Name & Description	Pcs/Set	Remarks
		COILS		
L8501	ELESN101KA		100	1
L8504	ELESN101KA		100	1
		PIN HEADERS		
P8501	VJHS0299		9P	1
		RESISTORS		
J8509	● ERD21LL0	CHIP 1/8W	0	1
		MISCELLANEOUS		
E68	VEKS5221	LUG ASS'Y		1
E78	VSCS2007	SHIELD CASE -TOP		1
E79	VSCS2008	SHIELD CASE -BOTTOM		1
	■	POWER SUPPLY ASS'Y		
		INTEGRATED CIRCUITS		
IC1001	▲ PS2501-1-X	IC BIPOLAR LINEAR ERROR V.DET		1
	▲ OR 0N3131-R.KT	IC BIPOLAR LINEAR ERROR V.DET		
		TRANSISTORS		
Q1001	▲ 2SC4533LP.KT			1
	▲ OR 2SC5130LF608			
Q1002	▲ 2SD1458			1
Q1003	▲ 2SD636(Q)			1
Q1004	▲ 2SB641(Q)			1
Q1005	▲ 2SB641(R)			1
		DIODES		
D1001	▲ S1WBA40			1
D1002, 1003	▲ ERA18-04			2
D1005	▲ MA188-TA5			1
	▲ OR 1SS244T-77			
D1006	▲ RU2YXLCF1			1
	▲ OR ERB32-01L3			
D1007	▲ MA188-TA5			1
	▲ OR 1SS244T-77			
D1008	▲ D2S4M			1
	▲ OR EK13			
	▲ OR EK13F7			
	▲ OR ERB83-004			
	▲ OR ERB83-004G1			
D1011	MA4051NH	ZENER	5.1V	1
D1012	MA858			1
D1013	MA165			1
D1015	▲ MA2180LF	ZENER	18V	1
D1016	MA165			1
		RESISTORS		
R1003	VRESE2TJ334		1/2W 330K	1
R1004	▲ ERG2SJ333H	METAL OXIDE	2W 33K	1
	▲ OR ERG2SJ333H	METAL OXIDE	2W 33K	
	▲ OR ERG2SJ333H	METAL OXIDE	2W 33K	
R1005	▲ ERG1SJ560P	METAL OXIDE	1W 56	1
	▲ OR ERG1SJ560P	METAL OXIDE	1W 56	
	▲ OR ERG1SJ560P	METAL OXIDE	1W 56	
R1006	ERDS2TJ222		2.2K	1
R1007	ERDS2TJ101		100	1
R1008	ERDS2TJ392		3.9K	1
R1010, 1011	▲ ERD25FJ100P		10	2
	▲ OR ERD25FFJ100P		10	
	▲ OR VRESF4FJ100P		10	
R1014, 1015	ERDS2TJ221		220	2
R1016	ERDS2TJ562		5.6K	1
R1017	ERDS2TJ103		10K	1
R1018	ERDS2TJ183		18K	1
R1019	ERDS2TJ392		3.9K	1
R1020	ERDS2TJ682		6.8K	1
R1022	ERDS2TJ221		220	1

Ref. No.	Part No.	Part Name & Description	Pcs/Set	Remarks
CAPACITORS				
C1001	▲ ECKDRS103ZV	CERAMIC +80%-20% 125V 0.01	1	
	▲ OR VCKSEKD103PZ	CERAMIC +80%-20% 125V 0.01		
	▲ OR VCKSEMD103PZ	CERAMIC +80%-20% 125V 0.01		
	▲ OR VCKSGKD103ZZ	CERAMIC +80%-20% 125V 0.01		
	▲ OR VCKSGMD103ZZ	CERAMIC +80%-20% 125V 0.01		
C1002	▲ ECKCNS332ME	CERAMIC +-20% 125V 0.0033	1	
	▲ OR ECKDNS332MED	CERAMIC +-20% 125V 0.0033		
	▲ OR ECKDRS332MED	CERAMIC +-20% 125V 0.0033		
	▲ OR VCKSEKD332MY	CERAMIC +-20% 125V 0.0033		
	▲ OR VCKSEVD332MY	CERAMIC +-20% 125V 0.0033		
	▲ OR VCKSHKD332MH	CERAMIC +-20% 125V 0.0033		
C1003	▲ VCKSFK102MX	CERAMIC +-20% 125V 0.001	1	
	▲ OR VCKSPMK102MX	CERAMIC +-20% 125V 0.001		
	▲ OR VCKSVK102MX	CERAMIC +-20% 125V 0.001		
C1004	▲ ECEA2DJB20YE	ELECTROLYTIC 200V 82	1	
	▲ OR VCESR2D820XE	ELECTROLYTIC 200V 82		
C1005	ECEA2DG4R7	ELECTROLYTIC 200V 4.7	1	
C1006	ECKWZH221KB5	CERAMIC 500V 220P	1	
C1007	VCYSBRC104MX	CERAMIC +-20% 16V 0.1	1	
C1009	ECQB1H103JF	POLYESTER +-5% 50V 0.01	1	
C1010	VCYSARH102KB	CERAMIC 50V 0.001	1	
C1011	▲ ECEA1H4R7B	ELECTROLYTIC 50V 4.7	1	
	▲ OR VCESP1H4R7B	ELECTROLYTIC 50V 4.7		
	▲ OR VCESO1H4R7B	ELECTROLYTIC 50V 4.7		
	▲ OR VCESR1H4R7B	ELECTROLYTIC 50V 4.7		
C1012, 1013	▲ ECEA1PEE331B	ELECTROLYTIC 18V 330	2	
	▲ OR VCESN1P331B	ELECTROLYTIC 18V 330		
	▲ OR VCESU1P331B	ELECTROLYTIC 18V 330		
C1014	▲ ECEA1HGE4R7B	ELECTROLYTIC 50V 4.7	1	
	▲ OR VCESS1H4R7B	ELECTROLYTIC 50V 4.7		
	▲ OR VCESV1H4R7B	ELECTROLYTIC 50V 4.7		
	▲ OR VCESI1H4R7B	ELECTROLYTIC 50V 4.7		
C1016	▲ ECEA0JEE331B	ELECTROLYTIC 6.3V 330	1	
	▲ OR VCESU0J331B	ELECTROLYTIC 6.3V 330		
C1017	▲ ECA0JM102B	ELECTROLYTIC 6.3V 1K	1	
	▲ OR ECEA0JU102B	ELECTROLYTIC 6.3V 1K		
	▲ OR VCESM0J102B	ELECTROLYTIC 6.3V 1K		
	▲ OR VCESP0J102B	ELECTROLYTIC 6.3V 1K		
	▲ OR VCESO0J102B	ELECTROLYTIC 6.3V 1K		
	▲ OR VCESR0JE102	ELECTROLYTIC 6.3V 1K		
C1018	VCYSBRC104MX	CERAMIC +-20% 16V 0.1	1	
C1021	ECEA1HKG010	ELECTROLYTIC 50V	1	
C1025	▲ ECKDRS221MB	CERAMIC +-20% 125V 220P	1	
	▲ OR VCKSEJD221KW	CERAMIC 125V 220P		
	▲ OR VCKSHJD221MW	CERAMIC +-20% 125V 220P		
	▲ OR VCKSHLD221MW	CERAMIC +-20% 125V 220P		
C1028	▲ ECKDRS221MB	CERAMIC +-20% 125V 220P	1	
	▲ OR VCKSEJD221KW	CERAMIC 125V 220P		
	▲ OR VCKSHJD221MW	CERAMIC +-20% 125V 220P		
	▲ OR VCKSHLD221MW	CERAMIC +-20% 125V 220P		
C1030	ECQB1H183JF	POLYESTER +-5% 50V 0.018	1	
COILS				
L1001	▲ ELF18D290A		29	1
	▲ OR ELF18D290A-P		29	
L1002	VLOS7A220M	+20%	22	1
L1003	VLOS7A9R0M	+20%	9	1
L1006	VLPS0005A		22	1
PIN HEADERS				
P1001	VJWS7BE170BD	FLAT CABLE 7P		1
FUSE & PROTECTOR				
F1001	▲ VSFS0003A16	FUSE 125V 1.6A	1	
	▲ OR VSFS0012A16	FUSE 125V 1.6A		
	▲ OR XBATC16NU100	FUSE 125V 1.6A		
PR1001	▲ ICP-F38	IC PROTECTOR 1.5A	1	
	▲ OR ICP-F38-1	IC PROTECTOR 1.5A		
	▲ OR UN10015	IC PROTECTOR 1.5A		
TRANSFORMER				
T1001	▲ VTSP0033			1
	▲ OR ETS28AD1F5AC			

(E14, E15, E16, E19)

Ref. No.	Part No.	Part Name & Description	Pcs/Set	Remarks
MISCELLANEOUS				
E15	VJSS0164	FUSE HOLDER	2	
E14	VSCS1984	SHIELD CASE -TOP	1	
E16	VSCS2036	SHIELD CASE -BODY	1	
OPERATION I C.B.A. (A,B,C,D)				
DIODES				
D7502, 7503	WG713A		2	
D7505	WG713A		1	
PIN HEADERS				
P7551	VJSS0469	CONNECTOR 19P	1	
SWITCHES				
SW7501, 7502	EVOPAD05R	PUSH SWITCH	2	
SW7506, 7507	EVOPAD05R	PUSH SWITCH	2	
SW7510	EVOPAD05R	PUSH SWITCH	1	
OPERATION II C.B.A. (E,F,G,H)				
DIODES				
D7502, 7503	WG713A		2	
D7505	WG713A		1	
D7510, 7511	MA4130-M	ZENER	13V 2	
PIN HEADERS				
P7551	VJSS0469	CONNECTOR 19P	1	
SWITCHES				
SW7501, 7502	EVOPAD05R	PUSH SWITCH	2	
SW7506, 7507	EVOPAD05R	PUSH SWITCH	2	
SW7510	EVOPAD05R	PUSH SWITCH	1	
MISCELLANEOUS				
E19	SPS-420-2-B	IR WIRELESS RECEIVING DETECTOR	1	
OPERATION II C.B.A. (A,B,C,D)				
INTEGRATED CIRCUITS				
IC4501	UPC4570C	IC BIPOLOAR LINEAR OP AMP	1	
DIODES				
D4501, 4502	HZS5C2TD	ZENER	5V 2	
D4591, 4592	HZS9C1TD	ZENER	9V 2	
D4593, 4594	HZS12B3TD	ZENER	12V 2	
D7501	WG713A		1	
D7504	WG713A		1	
D7554	LN31GCPHLMU	LED GREEN	1	
D7555	LN21RCPHLMV	LED RED	1	
D7557	LN31GCPHLMU	LED GREEN	1	
D7558	LN41YCPHLM	LED YELLOW	1	
RESISTORS				
R4501	ERDS2TJ562		5.6K 1	
R4502, 4503	ERDS2TJ104		100K 2	
R4504	ERDS2TJ750		75 1	
R4505	ERDS2TJ470		47 1	
R4591, 4592	ERDS2TJ101		100 2	
CAPACITORS				
C4501	ECEA1HKN010	ELECTROLYTIC 50V	1	1
C4502	VCYSARC103HY	CERAMIC +-30% 16V 0.01	1	

(E19, E21, E39)

Ref. No.	Part No.	Part Name & Description	Pcs/ Set	Remarks
		SWITCHES		
SW7508	EVOPAD05R	PUSH SWITCH	1	
SW7511-7514	EVOPAD05R	PUSH SWITCH	4	
		MISCELLANEOUS		
JK4501	VJHS0331	A/V JACK	1	
JK4591	VJJS0357	EARPHONE JACK	1	
E19	SPS-420-2-B	IR WIRELESS RECEIVING DETECTOR	1	
E21	VMXS0583	LED SPACER	4	
		OPERATION II C.B.A. (E,F,G,H)		
		DIODES		
D7501	WG713A		1	
D7504	WG713A		1	
D7554	LN31GCPHLMJ	LED GREEN	1	
D7555	LN21RCPLMV	LED RED	1	
D7557	LN31GCPHLMJ	LED GREEN	1	
D7558	LN41YCPHLM	LED YELLOW	1	
		SWITCHES		
SW7508	EVOPAD05R	PUSH SWITCH	1	
SW7511-7514	EVOPAD05R	PUSH SWITCH	4	
		MISCELLANEOUS		
E39	VMXS0575	LED SPACER	4	
		AUDIO/VIDEO JACK C.B.A. (E,F,G,H)		
		INTEGRATED CIRCUITS		
IC4501	UPC4570C	IC BIPOLOAR LINEAR OP AMP	1	
		DIODES		
D4501, 4502	HZS5C2TD	ZENER 5V	2	
D4591-4594	HZS9C1TD	ZENER 9V	4	
		RESISTORS		
R4501	ERDS2TJ562	5.6K	1	
R4502, 4503	ERDS2TJ104	100K	2	
R4504	ERDS2TJ750	75	1	
R4505	ERDS2TJ470	47	1	
R4591, 4592	ERDS2TJ101	100	2	
		CAPACITORS		
C4501	ECEA1HKN010	ELECTROLYTIC 50V	1	1
C4502	VCYSHRE104ZF	CERAMIC +80%-20% 25V	0.1	1
		PIN HEADERS		
P4501	VEKS5272	CONNECTOR ASS'Y	1	
P4591	VEKS5274	CONNECTOR ASS'Y	1	
		MISCELLANEOUS		
JK4501	VJHS0331	A/V JACK	1	
JK4591	VJJS0357	EARPHONE JACK	1	
		CAPSTAN MOTOR DRIVE C.B.A.		
		INTEGRATED CIRCUITS		
IC2501	AN3826NK	IC BIPOLAR LINEAR CAP. DRIVE	1	
IC2502	PUA3228	IC BIPOLAR LINEAR POWER DRIVE	1	

Ref. No.	Part No.	Part Name & Description	Pcs/ Set	Remarks
		RESISTORS		
R2501	VRESF2VJR68	1/2W 0.68	1	
R2503	VRDSAL8J270	CHIP 1/8W 27	1	
R2504	VRDSAL8J330	CHIP 1/8W 33	1	
R2505	ERD10LLJ222	CHIP 1/8W 2.2K	1	
		CAPACITORS		
C2501-2503	ECEA1CK100	ELECTROLYTIC 16V	10	3
C2504	MCUV1C104ZFN	C CHIP +80%-20% 16V	0.1	1
C2505	ECEA1HU010	ELECTROLYTIC 50V	1	1
C2506	VCYW1C563KX	CERAMIC 16V 0.056	1	
C2507, 2508	MCUV1C104ZFN	C CHIP +80%-20% 16V	0.1	2
C2509-2511	VCUSBC2103NY	C CHIP +-30% 16V	0.01	3
C2512	VCUSDC2152NX	C CHIP +-30% 16V	0.0015	1
		PIN HEADERS		
P2501	VJSS0648	22P	1	
P2503	VJWS6HB095LE	FLAT CABLE 6P	1	
		HEAD AMP ASS'Y (A,B,C,D,E,F,G)		
		INTEGRATED CIRCUITS		
IC2601	AN3813K	IC BIPOLAR LINEAR CYL. DRIVE	1	
IC3501	AN3362K	IC BIPOLAR LINEAR HEAD AMP	1	
		RESISTORS		
R2601-2603	ERJ6GEYJ471V	MGF CHIP 1/10W 470	3	
R2604	ERDS2TJ1R0		1	1
R2605	ERDS2TJ1R2		1.2	1
R2606	ERJ6GEYJ561V	MGF CHIP 1/10W 560	1	
R3504, 3505	ERJ6GEYJ560V	MGF CHIP 1/10W 56	2	
R3506	ERJ6GEYJ331V	MGF CHIP 1/10W 330	1	
R3508	ERJ6GEYJ100V	MGF CHIP 1/10W 10	1	
		CAPACITORS		
C2601-2603	ECUV1E104ZFN	C CHIP +80%-20% 25V	0.1	3
C2604-2607	ECUV1E104KBN	C CHIP 25V	0.1	4
C2608, 2609	ECUV1E104ZFN	C CHIP +80%-20% 25V	0.1	2
C2610	ECUV1H103ZFN	C CHIP +80%-20% 50V	0.01	1
C2611	ECUV1E223KBN	C CHIP 25V	0.022	1
C2612	ECUV1E104ZFN	C CHIP +80%-20% 25V	0.1	1
C3504	ECEA1CKA470	ELECTROLYTIC 16V	47	1
C3505	ECUV1H103ZFN	C CHIP +80%-20% 50V	0.01	1
C3506	ECUV1E104ZFN	C CHIP +80%-20% 25V	0.1	1
C3519	ECUV1E104ZFN	C CHIP +80%-20% 25V	0.1	1
C3520	ECUV1C224ZFN	C CHIP +80%-20% 16V	0.22	1
C3524	ECUV1C224ZFN	C CHIP +80%-20% 16V	0.22	1
C3525	ECUV1E104ZFN	C CHIP +80%-20% 25V	0.1	1
C3529	ECUV1H103ZFN	C CHIP +80%-20% 50V	0.01	1
C3532	ECUV1E104ZFN	C CHIP +80%-20% 25V	0.1	1
		COILS		
L3501	ELESN101KA		100	1
		PIN HEADERS		
P3501	VJSS0648	22P	1	
		HEAD AMP ASS'Y (H)		
		INTEGRATED CIRCUITS		
IC2601	AN3813K	IC BIPOLAR LINEAR CYL. DRIVE	1	
IC3501	AN3361SB	IC BIPOLAR LINEAR HEAD AMP	1	
		RESISTORS		
R2601-2603	ERJ6GEYJ471V	MGF CHIP 1/10W 470	3	
R2604	ERDS2TJ1R0		1	1
R2605	ERDS2TJ1R2		1.2	1
R2606	ERJ6GEYJ561V	MGF CHIP 1/10W 560	1	
R3501	ERJ6GEYJ473V	MGF CHIP 1/10W 47K	1	

(E53, E54)

Ref. No.	Part No.	Part Name & Description	Pcs/Set	Remarks
R3502-3505	ERJ6GEYJ560V	MGF CHIP 1/10W 56	4	
R3506, 3507	ERJ6GEYJ561V	MGF CHIP 1/10W 560	2	
R3508	ERJ6GEYJ100V	MGF CHIP 1/10W 10	1	
CAPACITORS				
C2601-2603	ECUV1E104ZFN	C CHIP +80%-20% 25V 0.1	3	
C2604-2607	ECUV1E104KBN	C CHIP 25V 0.1	4	
C2608, 2609	ECUV1E104ZFN	C CHIP +80%-20% 25V 0.1	2	
C2610	ECUV1H103ZFN	C CHIP +80%-20% 50V 0.01	1	
C2611	ECUV1E223KBN	C CHIP 25V 0.022	1	
C2612	ECUV1E104ZFN	C CHIP +80%-20% 25V 0.1	1	
C3504	ECUV1H103ZFN	C CHIP +80%-20% 50V 0.01	1	
C3505	ECEA1CKA470	ELECTROLYTIC 16V 47	1	
C3506	ECUV1E104ZFN	C CHIP +80%-20% 25V 0.1	1	
C3507	ECUV1H103KBN	C CHIP 50V 0.01	1	
C3508	ECUV1C224ZFN	C CHIP +80%-20% 16V 0.22	1	
C3511, 3512	ECUV1E104ZFN	C CHIP +80%-20% 25V 0.1	2	
C3513	ECUV1C224ZFN	C CHIP +80%-20% 16V 0.22	1	
C3519	ECUV1E104ZFN	C CHIP +80%-20% 25V 0.1	1	
C3520	ECUV1C224ZFN	C CHIP +80%-20% 16V 0.22	1	
C3524	ECUV1C224ZFN	C CHIP +80%-20% 16V 0.22	1	
C3525	ECUV1E104ZFN	C CHIP +80%-20% 25V 0.1	1	
C3528	ECUV1E104ZFN	C CHIP +80%-20% 25V 0.1	1	
C3529	ECUV1H103ZFN	C CHIP +80%-20% 50V 0.01	1	
C3532	ECUV1E104ZFN	C CHIP +80%-20% 25V 0.1	1	
C3533	ECUV1H103ZFN	C CHIP +80%-20% 50V 0.01	1	
COILS				
L3501	ELESN101KA		100	1
PIN HEADERS				
P3501	VJSS0648		22P	1
TV MAIN C.B.A. (A,B,C,D)				
INTEGRATED CIRCUITS				
IC301	LA7621	IC BIPOLAR LINEAR LUMA/CHROMA	1	
IC451 (E54)	LA7835	IC BIPOLAR LINEAR VERTICAL OUT	1	
TRANSISTORS				
Q006	2SC1684 (R)		1	
Q309, 310	2SB641 (Q)		2	
Q501	2SC1473A (Q)		1	
Q505, 506	2SB641 (Q)		2	
Q507	2SD636 (Q)		1	
Q510	2SD636 (Q)		1	
Q551 (E53)	2SD1555LBMV		1	
DIODES				
D013	MA165		1	
D302, 303	MA165		2	
D304	MA4082-M	ZENER 8.2V	1	
D308	MA165		1	
D401	EM12V		1	
D501	MA4082-H	ZENER 8.2V	1	
D503	ERB43-04V		1	
	OR ES1V			
D506	MA165		1	
D507	MA4200-H	ZENER 20V	1	
D508	MA165		1	
D510	MA4075-HTAKT	ZENER 7.5V	1	
D514	MA165		1	
D553	ERB43-04V		1	
	OR ES1V			
D554, 555	MA167		2	
D558	ERB43-04V		1	
	OR ES1V			
D560	ERB43-04V		1	
	OR ES1V			
D601-603	MA165		3	

Ref. No.	Part No.	Part Name & Description	Pcs/Set	Remarks
RESISTORS				
R023	ERDS2TJ122		1.2K	1
R024	ERDS2TJ103		10K	1
R301	ERDS2TJ333		33K	1
R302	ERDS2TJ104		100K	1
R304	ERDS2TJ393		39K	1
R305	ERDS2TJ104		100K	1
R306	ERDS2TJ392		3.9K	1
R307	ERDS2TJ183		18K	1
R310	ERDS2TJ122		1.2K	1
R311	ERDS2TJ393		39K	1
R314	ERDS2TJ473		47K	1
R316	ERDS2TJ392		3.9K	1
R317	ERDS2TJ153		15K	1
R318	ERDS2TJ104		100K	1
R320	ERDS2TJ392		3.9K	1
R324	EVND8AA03B14	VARIABLE	10K	1
R325	EVND8AA03B13	VARIABLE	1K	1
R327	ERDS2TJ103		10K	1
R333	ERDS2TJ182		1.8K	1
R335	ERDS2TJ821		820	1
R336	ERDS2TJ152		1.5K	1
R338	ERDS2TJ471		470	1
R342	ERDS2TJ472		4.7K	1
R344	ERDS2TJ472		4.7K	1
R345	ERDS2TJ271		270	1
R349	ERDS2TJ103		10K	1
R394, 395	ERDS2TJ103		10K	2
R396	ERDS2TJ104		100K	1
R401	ERDS2TJ222		2.2K	1
R402	ERDS2TJ333		33K	1
R409	ERDS2TJ273		27K	1
R410	EVND8AA03B54	VARIABLE	50K	1
R411	ERDS2TJ223		22K	1
R413	ERDS2TJ272		2.7K	1
R414	ERDS1FJ2R2P	1/2W	2.2	1
	OR ERDS1FPJ2R2V	1/2W	2.2	
R415	ERDS2TJ393		39K	1
R416	ERDS2TJ472		4.7K	1
R417	ERDS2TJ561		560	1
R418	ERDS2TJ474		470K	1
R422	ERDS2FJ101P		100	1
	OR ERDS2FJPJ101V		100	
R425	ERDS2TJ564		560K	1
R427	ERDS2TJ1R5		1.5	1
R441	ERDS2TJ102		1K	1
R443	ERDS2TJ153		15K	1
R445	ERDS2TJ101		100	1
R447	ERDS2TJ333		33K	1
R448	ERDS2TJ684		680K	1
R501	ERDS2TJ331		330	1
R502	ERDS2TJ332		3.3K	1
R503	ERDS2FJ681P		680	1
	OR ERDS2FJPJ681V		680	
R504	ERDS2TJ153		15K	1
R505	ERDS1FJ221P	1/2W	220	1
	OR ERDS1FPJ221V	1/2W	220	
R506	ERDS2TJ222		2.2K	1
R507	ERDS2TKF1502	METAL FILM +-1%	15K	1
	OR KRDS2TKF1502V		15K	
R508	ERDS2FJ100P		10	1
	OR ERDS2FJPJ100V		10	
R509	ERDS2TKF2372	METAL FILM +-1%	23.7K	1
	OR KRDS2TKF2372V		23.7K	
R511	ERG12SJ273P	METAL OXIDE 1/2W	27K	1
R512	ERDS2TJ183		18K	1
R513	ERDS2TJ562		5.6K	1
R516	ERG3ANJ472H	METAL OXIDE 3W	4.7K	1
R518	ERG3ANJ472H	METAL OXIDE 3W	4.7K	1
R519	ERDS2TJ154		150K	1
R521	ERDS2TJ101		100	1
R522	ERDS2TJ103		10K	1
R523	ERDS2TJ333		33K	1
R524	ERDS2TJ223		22K	1
R525	ERDS2TJ822		8.2K	1
R526	ERDS2TJ155		1.5M	1
R527	ERDS2TJ272		2.7K	1
R530	ERG2SJ471V	METAL OXIDE 2W	470	1
	OR ERG2SJ471H		470	
R536	ERDS2TJ183		18K	1

(E8, E9, E41, E47, E48, E49, E50, E54, E57, E59, E60, E67, E70)

Ref. No.	Part No.	Part Name & Description	Pcs/ Set	Remarks
R537	ERDS2TJ821		820 1	
R545	ERDS2TJ680		68 1	
R551	ERDS2TJ103		10K 1	
R552	ERDS2TJ273		27K 1	
R553	ERDS2TJ102		1K 1	
R554	ERDS2TJ123		12K 1	
R555	ERDS2TJ154		150K 1	
R556	ERDS2TJ823		82K 1	
R558	△ ERG2SJ471V	METAL OXIDE 2W 470 1		
	△ OR ERG2SJ471H	METAL OXIDE 2W 470 1		
R601-603	ERDS2TJ331		330 3	
R604	ERDS2TJ334		330K 1	
R605	ERDS2TJ564		560K 1	
R607	ERDS2TJ152		1.5K 1	
R608	ERDS2TJ102		1K 1	
R609	ERDS2TJ222		2.2K 1	
R610	ERDS2TJ102		1K 1	
R614	ERDS2TJ222		2.2K 1	
R621	ERDS2TJ273		27K 1	
R622	EYND8AA03B24	VARIABLE 20K 1		
R623	ERDS2TJ183		18K 1	
R624	ERDS2TJ273		27K 1	
R625	ERDS2TJ392		3.9K 1	
R626	ERDS2TJ393		39K 1	
R627	ERDS2TJ332		3.3K 1	
R628	ERDS2TJ223		22K 1	
R629	ERDS2TJ273		27K 1	
R630	ERDS2TJ102		1K 1	
R631	ERDS2TJ392		3.9K 1	
CAPACITORS				
C301	ECEA1HU3R3	ELECTROLYTIC 50V 3.3 1		
C311	ECEA1EU4R7	ELECTROLYTIC 25V 4.7 1		
C313	ECEA1HU010	ELECTROLYTIC 50V 1 1		
C314	ECEA1CU100	ELECTROLYTIC 16V 10 1		
C315	VCYSARH220JC	CERAMIC +-5% 50V 22P 1		
C316	VCYSARH150JC	CERAMIC +-5% 50V 15P 1		
C401	ECEA1HGE1R5	ELECTROLYTIC 50V 1.5 1		
C402	ECEA1CU471	ELECTROLYTIC 16V 470 1		
C406	ECKW1H122KB5	CERAMIC 50V 0.0012 1		
C407	ECKW1H561KB5	CERAMIC 50V 560P 1		
C408	ECEA1HGE010	ELECTROLYTIC 50V 1 1		
C409	ECEA1EU101	ELECTROLYTIC 25V 100 1		
C410	ECKW1H472KB5	CERAMIC 50V 0.0047 1		
C411	ECCW1H100DC5	CERAMIC +-10% 50V 10P 1		
C413	ECCW1H104KV	POLYESTER 50V 0.1 1		
C414	ECEA1CU222	ELECTROLYTIC 16V 2.2K 1		
C415	ECEA1HU0R1	ELECTROLYTIC 50V 0.1 1		
C416	ECCW1H563KV	POLYESTER 50V 0.056 1		
C417	ECEA1HU010	ELECTROLYTIC 50V 1 1		
C418	ECEA1EU101	ELECTROLYTIC 25V 100 1		
C501	△ ECEA1VS100B	ELECTROLYTIC 35V 10 1		
	△ OR ECEA1VU100B	ELECTROLYTIC 35V 10 1		
	△ OR SCEA1VS100B	ELECTROLYTIC 35V 10 1		
	△ OR SCEA1VU100B	ELECTROLYTIC 35V 10 1		
C502	ECEA1CU471	ELECTROLYTIC 16V 470 1		
C503	VCYSARH561KB	CERAMIC 50V 560P 1		
C504	ECKW1H103ZF5	CERAMIC +80%-20% 50V 0.01 1		
C506	ECCW1H473KV	POLYESTER 50V 0.047 1		
C507	ECEA1HU3R3	ELECTROLYTIC 50V 3.3 1		
C508	ECCW1H103KV	POLYESTER 50V 0.01 1		
C509	ECEA1CU470	ELECTROLYTIC 16V 47 1		
C510	ECKW2H331KB5	CERAMIC 500V 330P 1		
C511	ECKW1H272KB5	CERAMIC 50V 0.0027 1		
C512	ECCW1H560JC5	CERAMIC +-5% 50V 56P 1		
C513	ECKW1H122KB5	CERAMIC 50V 0.0012 1		
C514	ECKC3D271KB	CERAMIC 2KV 270P 1		
C516	ECKW1H103ZF5	CERAMIC +80%-20% 50V 0.01 1		
C520	ECKW1H103ZF5	CERAMIC +80%-20% 50V 0.01 1		
C521	ECEA1HU010	ELECTROLYTIC 50V 1 1		
C522	ECKW1H103ZF5	CERAMIC +80%-20% 50V 0.01 1		
C523	ECEA1HU100	ELECTROLYTIC 50V 10 1		
C527	ECCF2H364JZA	POLYESTER 500V 0.36 1		
C530	ECKW1H562KB5	CERAMIC 50V 0.0056 1		
C531	ECKW1H182KB5	CERAMIC 50V 0.0018 1		
C532	VCYSARH181KB	CERAMIC 50V 180P 1		
C551	ECKW2H221KB5	CERAMIC 500V 220P 1		
C552	ECEA1CU101	ELECTROLYTIC 16V 100 1		
C554	△ ECW1H2H562J5	POLYESTER +-5% 1250V 0.0056 1		

Ref. No.	Part No.	Part Name & Description	Pcs/ Set	Remarks
	△ OR TCWH12H562J5	POLYESTER +-5% 1250V 0.0056		
C558	ECEA1EU101	ELECTROLYTIC 25V 100 1		
C560	△ ECEA2DS100E	ELECTROLYTIC 200V 10 1		
	△ OR ECEA2DU100E	ELECTROLYTIC 200V 10		
C561	△ ECEA2CU2R2B	ELECTROLYTIC 160V 2.2 1		
C601-603	VCYSARH391KB	CERAMIC 50V 390P 3		
C605	ECCW1H104KV	POLYESTER 50V 0.1 1		
C606	ECCW1H153KV	POLYESTER 50V 0.015 1		
C607, 608	ECEA1HU2R2	ELECTROLYTIC 50V 2.2 2		
C609	ECCW1H330JC5	CERAMIC +-5% 50V 33P 1		
C610	ECKW1H103ZF5	CERAMIC +80%-20% 50V 0.01 1		
C611	ECEA1HU2R2	ELECTROLYTIC 50V 2.2 1		
C612	ECEA1EU4R7	ELECTROLYTIC 25V 4.7 1		
C614	ECCW1H560JC5	CERAMIC +-5% 50V 56P 1		
C615	ECCW1H150JC5	CERAMIC +-5% 50V 15P 1		
C808	△ ECEA180V33WE	ELECTROLYTIC 180V 33 1		
C810	△ VCKS0009	CERAMIC +-20% 125V 0.0033 1		
	△ OR VCKS0009C	CERAMIC +-20% 125V 0.0033		
	△ OR VCKS0009CF	CERAMIC +-20% 125V 0.0033		
COILS				
L302	ELT10Z3C3		1	
L303	VLOSH02R101K		100 1	
L601	VLOSH02R100K		10 1	
CRYSTAL OSCILLATOR				
X501	CSB503F5		1	
X601	TSS816M		1	
PIN HEADERS				
PK1	VJPS0275		5P 1	
PK2	VJPS0177		7P 1	
PK6	VJPS0268		2P 1	
SWITCHES				
SW301	EVORBAL10	SERVICE SWITCH	1	
TRANSFORMER				
T501	TLH15419		1	
T502	△ ETE19Z30AY		1	
T551 (E57)	△ TLF14767F	FLYBACK TRANSFORMER	1	
PRINTED CIRCUIT BOARD ASSEMBLY				
E8	△ TNP73135AA	CRT C.B.A.	1	AKEI
E9	△ TNP73136BB	TV POWER C.B.A.	1	AKEI
MISCELLANEOUS				
E59	TMM16480-1	CLAMPER	1	
E41	TMM77412	CLAMPER	2	AKEI
E47	TUC76677-1	HEAT SINK PLATE	1	
E60	TUC77619	HEAT SINK PLATE	1	AKEI
E70	VJWS2AW220MM	FLAT CABLE 2P	1	AKEI
E67	VZFS0006	CLAMPER	2	
E50	XTV3+10G	TAPPING SCREW 3X10	1	
E49	XYN3+F12S	SCREW WITH WASHER 3X12	1	
E48	XYN3+F6S	SCREW WITH WASHER 3X6	1	
TV MAIN C.B.A. (E,F,G,H)				
INTEGRATED CIRCUITS				
IC301	△ LA7621	IC BIPOLAR LINEAR LUMA/CHROMA	1	
IC451 (E54)	△ LA7835	IC BIPOLAR LINEAR VERTICAL OUT	1	
	△ OR LA7835-TA	IC BIPOLAR LINEAR VERTICAL OUT		
TRANSISTORS				
Q006	2SC1684 (R)		1	
Q309, 310	2SB641 (Q)		2	
Q312	2SD636 (Q)		1	

(E53)

Ref. No.	Part No.	Part Name & Description	Pcs/ Set	Remarks
Q501	2SC2653H(C, L)		1	
Q505, 506	2SB641 (Q)		2	
Q507	2SD636 (Q)		1	
Q510	2SD636 (Q)		1	
Q513	2SB641 (Q)		1	
Q551 (E53)	2SD1555LBMV		1	
DIODES				
D013	MA165		1	
D302, 303	MA165		2	
D304	MA4082-M	ZENER 8.2V	1	
D308	MA165		1	
D401	EM12V		1	
D501	MA4082-H	ZENER 8.2V	1	
D503	ERB43-04V		1	
	OR ES1V			
D506	MA165		1	
D507	MA4200-H	ZENER 20V	1	
D508	MA165		1	
D510	MA4075-HTAKT	ZENER 7.5V	1	
D514	MA165		1	
D551	RH2FV		1	
D552	ERB44-04V		1	
	OR EU2ZV			
D553	ERB43-04V		1	
	OR ES1V			
D554	MA167		1	
D555	MA185		1	
D558	ERB43-04V		1	
	OR ES1V			
D560	ERB43-04V		1	
	OR ES1V			
D561	MA167		1	
D601-603	MA165		3	
RESISTORS				
R023	ERDS2TJ122	1.2K	1	
R024	ERDS2TJ103	10K	1	
R301	ERDS2TJ563	56K	1	
R302	ERDS2TJ104	100K	1	
R304	ERDS2TJ683	68K	1	
R305	ERDS2TJ124	120K	1	
R306	ERDS2TJ392	3.9K	1	
R307	ERDS2TJ183	18K	1	
R311	ERDS2TJ393	39K	1	
R314	ERDS2TJ473	47K	1	
R315	ERDS2TJ102	1K	1	
R316	ERDS2TJ392	3.9K	1	
R317	ERDS2TJ153	15K	1	
R318	ERDS2TJ104	100K	1	
R320	ERDS2TJ392	3.9K	1	
R324	EVND8AA03B14	VARIABLE 10K	1	
R325	EVND8AA03B13	VARIABLE 1K	1	
R327	ERDS2TJ103	10K	1	
R333	ERDS2TJ182	1.8K	1	
R335	ERDS2TJ821	820	1	
R336	ERDS2TJ182	1.8K	1	
R338	ERDS2TJ471	470	1	
R342	ERDS2TJ472	4.7K	1	
R344	ERDS2TJ472	4.7K	1	
R345	ERDS2TJ271	270	1	
R349	ERDS2TJ103	10K	1	
R372	ERQ2CJP2R2S	FUSE 2W	2.2	
R384	ERDS2TJ123	12K	1	
R385	ERDS2TJ223	22K	1	
R394, 395	ERDS2TJ103	10K	2	
R396	ERDS2TJ104	100K	1	
R401	ERDS2TJ681	680	1	
R402	ERDS2TJ333	33K	1	
R409	ERDS2TJ273	27K	1	
R410	EVND8AA03B15	VARIABLE 100K	1	
R411	ERDS2TJ223	22K	1	
R413	ERDS2TJ272	2.7K	1	
R414	ERDS1FJ1R2P	1/2W 1.2	1	
	OR ERDS1FPJ1R2V	1/2W 1.2		
R415	ERDS2TJ393	39K	1	
R416	ERDS2TJ472	4.7K	1	
R417	ERDS2TJ561	560	1	

Ref. No.	Part No.	Part Name & Description	Pcs/ Set	Remarks
R418	ERDS2TJ474		470K	
R422	ERD25FJ101P		100	
	OR ERD25FPJ101V		100	
R425	ERDS2TJ564		560K	
R427	ERDS2TJ1R5		1.5	
R441	ERDS2TJ472		4.7K	
R443	ERDS2TJ153		15K	
R445	ERDS2TJ101		100	
R447	ERDS2TJ823		82K	
R448	ERDS2TJ474		470K	
R501	ERDS2TJ331		330	
R502	ERDS2TJ332		3.3K	
R503	ERD25FJ681P		680	
	OR ERD25FPJ681V		680	
R504	ERDS2TJ153		15K	
R505	ERDS1FJ221P	1/2W 220	1	
	OR ERDS1FPJ221V	1/2W 220		
R506	ERDS2TJ182		1.8K	
R507	EROS2TKF1502	METAL FILM +-1% 15K	1	
	OR KROS2TKF1502	METAL FILM +-1% 15K	15K	
R508	ERD25FJ100P		10	
	OR ERD25FPJ100V		10	
R509	EROS2TKF3162	METAL FILM +-1% 31.6K	1	
	OR KROS2TKF3162	METAL FILM +-1% 31.6K	31.6K	
R511	ERG12S273P	METAL OXIDE 1/2W 27K	1	
R512	ERDS2TJ273		27K	
R513	ERDS2TJ562		5.6K	
R515	ERG2SJU392V	METAL OXIDE 2W 3.9K	1	
	OR ERG2SJ392H	METAL OXIDE 2W 3.9K		
R516	ERG3ANJ332H	METAL OXIDE 3W 3.3K	1	
R519	ERDS2TJ154		150K	
R521	ERDS2TJ101		100	
R522	ERDS2TJ103		10K	
R523	ERDS2TJ333		33K	
R524	ERDS2TJ223		22K	
R525	ERDS2TJ822		8.2K	
R526	ERDS2TJ155		1.5M	
R527	ERG1SJU102V	METAL OXIDE 1W 1K	1	
	OR ERG1SJ102P	METAL OXIDE 1W 1K		
R528	ERDS2TJ272		2.7K	
R530	ERG2ANJ331V	METAL OXIDE 2W 330	1	
	OR ERG2ANJ331H	METAL OXIDE 2W 330	330	
R531	ERDS2TJ105		1M	
R536	ERDS2TJ183		18K	
R537	ERDS2TJ821		820	
R539	ERDS2TJ561		560	
R543	ERDS2TJ183		18K	
R545	ERDS2TJ680		680	
R551	ERDS2TJ103		10K	
R552	ERDS2TJ273		27K	
R553	ERDS2TJ102		1K	
R554	ERDS2TJ103		10K	
R555, 556	ERDS2TJ823		82K	2
R558	ERG2ANJ561V	METAL OXIDE 2W 560	1	
	OR ERG2ANJ561H	METAL OXIDE 2W 560	560	
R601-603	ERDS2TJ331		330	3
R604	ERDS2TJ334		330K	
R605	ERDS2TJ564		560K	
R607	ERDS2TJ152		1.5K	
R608	ERDS2TJ102		1K	
R609	ERDS2TJ222		2.2K	
R610	ERDS2TJ102		1K	
R614	ERDS2TJ222		2.2K	
R621	ERDS2TJ273		27K	
R622	EVND8AA03B24	VARIABLE 20K	1	
R623	ERDS2TJ183		18K	
R624	ERDS2TJ273		27K	
R625	ERDS2TJ392		3.9K	
R626	ERDS2TJ393		39K	
R627	ERDS2TJ392		3.9K	
R628, 629	ERDS2TJ273		27K	2
R630	ERDS2TJ102		1K	
R631	ERDS2TJ392		3.9K	
CAPACITORS				
C301	ECEA1HU3R3	ELECTROLYTIC 50V	3.3	
C311	ECEA1EU4R7	ELECTROLYTIC 25V	4.7	
C313	ECEA1HU010	ELECTROLYTIC 50V	1	
C314	ECEA1CU100	ELECTROLYTIC 16V	10	

(E8, E9, E35, E20, E41, E42, E43, E47, E49, E50, E57, E60, E61, E67, E70, E73)

Ref. No.	Part No.	Part Name & Description	Pcs/ Set	Remarks
C315	VCYSARH220JC	CERAMIC +-5% 50V 22P	1	
C316	VCYSARH150JC	CERAMIC +-5% 50V 15P	1	
C401	ECEA1HGE1R5	ELECTROLYTIC 50V 1.5	1	
C402	ECEA1CU471	ELECTROLYTIC 16V 470	1	
C406	ECKW1H122KB5	CERAMIC 50V 0.0012	1	
C407	ECKW1H561KB5	CERAMIC 50V 560P	1	
C408	ECEA1HGE010	ELECTROLYTIC 50V 1	1	
C409	ECEA1VU101	ELECTROLYTIC 35V 100	1	
C410	ECKW1H472KB5	CERAMIC 50V 0.0047	1	
C411	ECOW1H100DC5	CERAMIC +-10% 50V 10P	1	
C413	EQCM1H104KV	POLYESTER 50V 0.1	1	
C414	ECEA1CU222	ELECTROLYTIC 16V 2.2K	1	
C415	ECEA1HUOR1	ELECTROLYTIC 50V 0.1	1	
C416	EQCM1H563KV	POLYESTER 50V 0.056	1	
C417	ECEA1HUO10	ELECTROLYTIC 50V 1	1	
C418	ECEA1VU101	ELECTROLYTIC 35V 100	1	
C429	ECKW1H222KB5	CERAMIC 50V 0.0022	1	
C501	△ ECEA1VS100B	ELECTROLYTIC 35V 10	1	
	△ OR ECEA1VU100B	ELECTROLYTIC 35V 10		
	△ OR SCEA1VS100B	ELECTROLYTIC 35V 10		
	△ OR SCEA1VU100B	ELECTROLYTIC 35V 10		
C502	ECEA1CU471	ELECTROLYTIC 16V 470	1	
C503	VCYSARH561KB	CERAMIC 50V 560P	1	
C504	ECKW1H103ZF5	CERAMIC +80%-20% 50V 0.01	1	
C506	EQCM1H473KV	POLYESTER 50V 0.047	1	
C507	ECEA1HU3R3	ELECTROLYTIC 50V 3.3	1	
C508	EQCM1H103KV	POLYESTER 50V 0.01	1	
C509	ECEA1CU470	ELECTROLYTIC 16V 47	1	
C510	ECKW2H681KB5	CERAMIC 500V 680P	1	
C511	ECKW1H272KB5	CERAMIC 50V 0.0027	1	
C512	ECOW1H560JC5	CERAMIC +-5% 50V 56P	1	
C513	ECOW1H101JC5	CERAMIC +-5% 50V 100P	1	
C514	△ ECKC3D152KBN	CERAMIC 2KV 0.0015	1	
	△ OR ECKC3D152KBP	CERAMIC 2KV 0.0015		
	△ OR TCKC3D152KBN	CERAMIC 2KV 0.0015		
C516	ECKW1H103ZF5	CERAMIC +80%-20% 50V 0.01	1	
C520	ECKW1H103ZF5	CERAMIC +80%-20% 50V 0.01	1	
C521	ECEA1HU010	ELECTROLYTIC 50V 1	1	
C522	ECKW1H103ZF5	CERAMIC +80%-20% 50V 0.01	1	
C523	ECEA1HU100	ELECTROLYTIC 50V 10	1	
C524	△ ECWH12H33ZJS	POLYESTER +-5% 1250V 0.0032	1	
	△ OR TOMH12H33ZJS	POLYESTER +-5% 1250V 0.0032		
C525	△ EQM2823KZW	POLYESTER 200V 0.082	1	
C527	ECOF2H334JZ	POLYESTER +-5% 500V 0.33	1	
C530	ECKW1H562KB5	CERAMIC 50V 0.0056	1	
C531	ECKW1H182KB5	CERAMIC 50V 0.0018	1	
C532	VCYSARH181KB	CERAMIC 50V 180P	1	
C551	ECKW2H221KB5	CERAMIC 500V 220P	1	
C552	ECEA1EU101	ELECTROLYTIC 25V 100	1	
C554	△ ECWH12H682J5	POLYESTER +-5% 1250V 0.0068	1	
	△ OR TAC51682P500	POLYESTER +100%-0% 1250V 6800P		
	△ OR TOMH12H685J5	POLYESTER +-5% 1250V 0.0068		
C558	ECEA1VU101	ELECTROLYTIC 35V 100	1	
C560	△ ECEA2ES100E	ELECTROLYTIC 250V 10	1	
	△ OR ECEA2EU100E	ELECTROLYTIC 250V 10		
C561	△ ECEA2CU2R2B	ELECTROLYTIC 160V 2.2	1	
C601-603	VCYSARH391KB	CERAMIC 50V 390P	3	
C605	EQCM1H104KV	POLYESTER 50V 0.1	1	
C606	EQCM1H153KV	POLYESTER 50V 0.015	1	
C607, 608	ECEA1HU2R2	ELECTROLYTIC 50V 2.2	2	
C609	ECOW1H330JC5	CERAMIC +-5% 50V 33P	1	
C610	ECKW1H103ZF5	CERAMIC +80%-20% 50V 0.01	1	
C611	ECEA1HU2R2	ELECTROLYTIC 50V 2.2	1	
C612	ECEA1EU4R7	ELECTROLYTIC 25V 4.7	1	
C614	ECOW1H560JC5	CERAMIC +-5% 50V 56P	1	
C615	ECOW1H150JC5	CERAMIC +-5% 50V 15P	1	
C808	△ ECEA180V33WE	ELECTROLYTIC 180V 33	1	
C810	△ VCKS0009	CERAMIC +-20% 125V 0.0033	1	
	△ OR VCKS0009C	CERAMIC +-20% 125V 0.0033		
	△ OR VCKS0009CF	CERAMIC +-20% 125V 0.0033		

Ref. No.	Part No.	Part Name & Description	Pcs/ Set	Remarks
		CRYSTAL OSCILLATOR		
X501	CSB503F5		1	
X601	TSS816M		1	
		PIN HEADERS		
PK1	VJPS0275		5P 1	
PK2	VJPS0177		7P 1	
PK6	VJPS0268		2P 1	
		SWITCHES		
SW301	EVORBAL10	SERVICE SWITCH	1	
		TRANSFORMER		
T501	ETH19Y70AY		1	
T502	▲ ETE19Z30AY		1	
T551 (E57)	▲ TLF15624F1	FLYBACK TRANSFORMER	1	AKEI
		PRINTED CIRCUIT BOARD ASSEMBLY		
E8	▲ TNP73139AA	CRT C.B.A.	1	AKEI
E9	▲ TNP73140BB	TV POWER C.B.A.	1	AKEI
		MISCELLANEOUS		
E41	TMM77412	CLAMPER	2	AKEI
E47	TUC76677-2	HEAT SINK PLATE	1	
E80	TUC77619	HEAT SINK PLATE	1	AKEI
E61	TUC77621	H-SUB HEAT SINK	1	AKEI
E20	TUC77622	V-SUB HEAT SINK	1	AKEI
E70	VJWS2AW220MM	FLAT CABLE 2P	1	AKEI
E67	VZFS0006	CLAMPER	2	
E50	XTV3+10G	TAPPING SCREW 3X10	1	
E35	XYN3+F10S	SCREW WITH WASHER 3X10	1	
E49	XYN3+F12S	SCREW WITH WASHER 3X12	1	
	▲	CRT C.B.A. (A,B,C,D)		
		TRANSISTORS		
0351-353	2SC1473 (O, N, C)		3	
		RESISTORS		
R351-353	▲ ERG1ANJP153V	METAL OXIDE 1W 15K	3	
	▲ OR ERG1ANJ153H	METAL OXIDE 1W 15K		
	▲ OR KRG1ANJ153H	METAL OXIDE 1W 15K		
R354-356	ERD25TJ272		2.7K 3	
R357-359	ERDS2TJ101		100 3	
R360-362	ERDS2TJ221		220 3	
R363	EVND1AA00B32	VARIABLE	300 1	
R364	ERDS2TJ101		100 1	
R365	EVND1AA00B32	VARIABLE	300 1	
R366-368	ERDS2TJ122		1.2K 3	
R369-371	EVND1AA00B53	VARIABLE	5K 3	
		CAPACITORS		
C351	VCYSARH821KB	CERAMIC 50V 820P	1	
C352, 353	VCYSARH681KB	CERAMIC 50V 680P	2	
C354	ECKC3D102KB	CERAMIC 2KV 0.001	1	
C355	ECKW2H102KB5	CERAMIC 500V 0.001	1	
		COILS		
L351	TLT221K991K		220 1	
		MISCELLANEOUS		
E42	TJS1A5081	CRT SOCKET	1	
E73	TMM77405	CLAMPER	1	
E43	TXAJT01134	FOCUS/SCREEN COUPLER	1	AKEI
E67	VZFS0006	CLAMPER	1	

(E42, E43, E67, E69, E73)

Ref. No.	Part No.	Part Name & Description	Pcs/ Set	Remarks
		CRT C.B.A. (E,F,G,H)		
		TRANSISTORS		
Q351-353	2SC3063(R, L)		3	
		RESISTORS		
R351-353	Δ ERG2ANJ123H	METAL OXIDE 2W 12K	3	
R354-356	ERD25TJ272	2.7K	3	
R357-359	ERDS2TJ101	100	3	
R360-362	ERDS2TJ181	180	3	
R363	EVND1AA00B32	VARIABLE	300	1
R364	ERDS2TJ101	100	1	
R365	EVND1AA00B32	VARIABLE	300	1
R366-368	ERDS2TJ821	820	3	
R369-371	EVND1AA00B33	VARIABLE	3K	3
		CAPACITORS		
C351-353	VCYSARH821KB	CERAMIC 50V 820P	3	
C354	ECKC3D102KB	CERAMIC 2KV 0.001	1	
C355	ECKW2H102KB5	CERAMIC 500V 0.001	1	
		MISCELLANEOUS		
E42	TJS1A5050	CRT SOCKET	1	
E73	TMM77405	CLAMPER	1	
E43	TXAJT01134	FOCUS/SCREEN COUPLER	1	AKEI
E67	VZFS0006S	CLAMPER	1	
		TV POWER C.B.A. (A,B,C,D)		
		INTEGRATED CIRCUITS		
IC801 (E69)	Δ STR30130	IC BIPOLAR LINEAR ERROR VOLTAGE DET	1	
		DIODES		
D008	1SS119		1	
D801-804	Δ EM02BMV		4	
	Δ OR ERC13-08V			
D851	Δ ERP75B0M050F	THERMISTOR	1	AKEI
	Δ OR VRPSFZ5JM050	THERMISTOR		
		RESISTORS		
R001	Δ ERC12ZGK825C	SOLID +-10% 1/2W 8.2M	1	
	Δ OR ERC12ZGK825V	SOLID +-10% 1/2W 8.2M		
R803	Δ ERF10ZJ331	W FLMPRF 10W 330	1	
R804	Δ ERDS1FJ103P	1/2W 10K	1	
	Δ OR ERDS1FPJ103V	1/2W 10K		
R805	Δ ER014AJ470P	FUSE 47	1	
R806	ERDS2TJ224	220K	1	
R807	Δ ER014AJ390P	FUSE 39	1	
R808	Δ ERQ2ABJP5R6S	FUSE 2W 5.6	1	
R810	Δ ERF3AKR82	W FLMPRF +-10% 3W 0.82	1	
	Δ OR KRF3AKR82	W FLMPRF +-10% 3W 0.82		
		CAPACITORS		
C001, 002	Δ VCKS0004	CERAMIC +80%-20% 125V 0.01	2	
	Δ OR VCKS0004C	CERAMIC +80%-20% 125V 0.01		
	Δ OR VCKS0004CF	CERAMIC +80%-20% 125V 0.01		
	Δ OR VCKS0012	CERAMIC +80%-20% 125V 0.01		
C801-803	ECKM2H472PE	CERAMIC +100%-0% 500V 0.0047	3	
C804	ECKM2H472PE	CERAMIC +100%-0% 500V 0.0047	1	
C805	Δ ECET2PR471SW	ELECTROLYTIC 200V 220	1	
C806	ECEA2EU100	ELECTROLYTIC 250V 10	1	
		COILS		
L801	Δ ELF18D424F		1	

(E15, E35, E63, E64, E65, E66, E69)

Ref. No.	Part No.	Part Name & Description	Pcs/ Set	Remarks
		PIN HEADERS		
PB2	VJPS0303		3P 1	
		FUSE & PROTECTOR		
F001	Δ XBA1C40NU100	FUSE 125V 4A	1	
		RELAY		
RL001	Δ TSE1860-1	RELAY	1	
		MISCELLANEOUS		
E66	TUC77616	GROUNDING PLATE	1	AKEI
E63	TUX77809	CLAMPER	1	AKEI
E15	VJSS0164	FUSE HOLDER	2	
E64	XTW3+10J	TAPPING SCREW 3X10	2	
E65	XYE3+EJ10	SCREW WITH WASHER 3X10	1	
E35	XYN3+FI0S	SCREW WITH WASHER 3X10	1	
		TV POWER C.B.A. (E,F,G,H)		
		INTEGRATED CIRCUITS		
IC801 (E69)	Δ STR30130	IC BIPOLAR LINEAR ERROR VOLTAGE DET	1	
		DIODES		
D008	1SS119		1	
D801-804	Δ EM02BMV		4	
	Δ OR ERC13-08V			
D851	Δ ERP75B0M050K	THERMISTOR	1	AKEI
	Δ OR TRPF5B0M050K	THERMISTOR		
		RESISTORS		
R001	Δ ERC12ZGK825C	SOLID +-10% 1/2W 8.2M	1	
	Δ OR ERC12ZGK825V	SOLID +-10% 1/2W 8.2M		
R803	Δ ERF15ZJ181	W FLMPRF 15W 180	1	
R804	Δ ERDS1FJ822P	1/2W 8.2K	1	
	Δ OR ERDS1FPJ822V	1/2W 8.2K		
R805	Δ ER014AJ470P	FUSE 47	1	
R806	ERDS2TJ224	220K	1	
R807	Δ ER014AJ390P	FUSE 39	1	
R808	Δ ER03CJ5R6H	FUSE 3W 5.6	1	
R810	Δ ERF3AKR82	W FLMPRF +-10% 3W 0.82	1	
	Δ OR KRF3AKR82	W FLMPRF +-10% 3W 0.82		
		CAPACITORS		
C001	Δ ECKCNS223ZV	CERAMIC +80%-20% 125V 0.022	1	
	Δ OR ECKDNS223ZV	CERAMIC +80%-20% 125V 0.022		
C002	Δ VCKS0004	CERAMIC +80%-20% 125V 0.01	1	
	Δ OR VCKS0004C	CERAMIC +80%-20% 125V 0.01		
	Δ OR VCKS0004CF	CERAMIC +80%-20% 125V 0.01		
	Δ OR VCKS0012	CERAMIC +80%-20% 125V 0.01		
C801-803	ECKM2H472PE7	CERAMIC +100%-0% 500V 0.0047	3	
C804	ECKM2H472PE	CERAMIC +100%-0% 500V 0.0047	1	
C805	Δ ECET2PR471SW	ELECTROLYTIC 180V 470	1	
C806	ECEA2EU220	ELECTROLYTIC 250V 22	1	
		COILS		
L801	Δ ELF18D650C		65	1
L802	VLQST4220M	+20%	22	1
		PIN HEADERS		
PB2	VJPS0303		3P 1	
		FUSE & PROTECTOR		
F001	Δ XBA1C40NU100	FUSE 125V 4A	1	
		RELAY		
RL001	Δ TSE1860-1	RELAY	1	

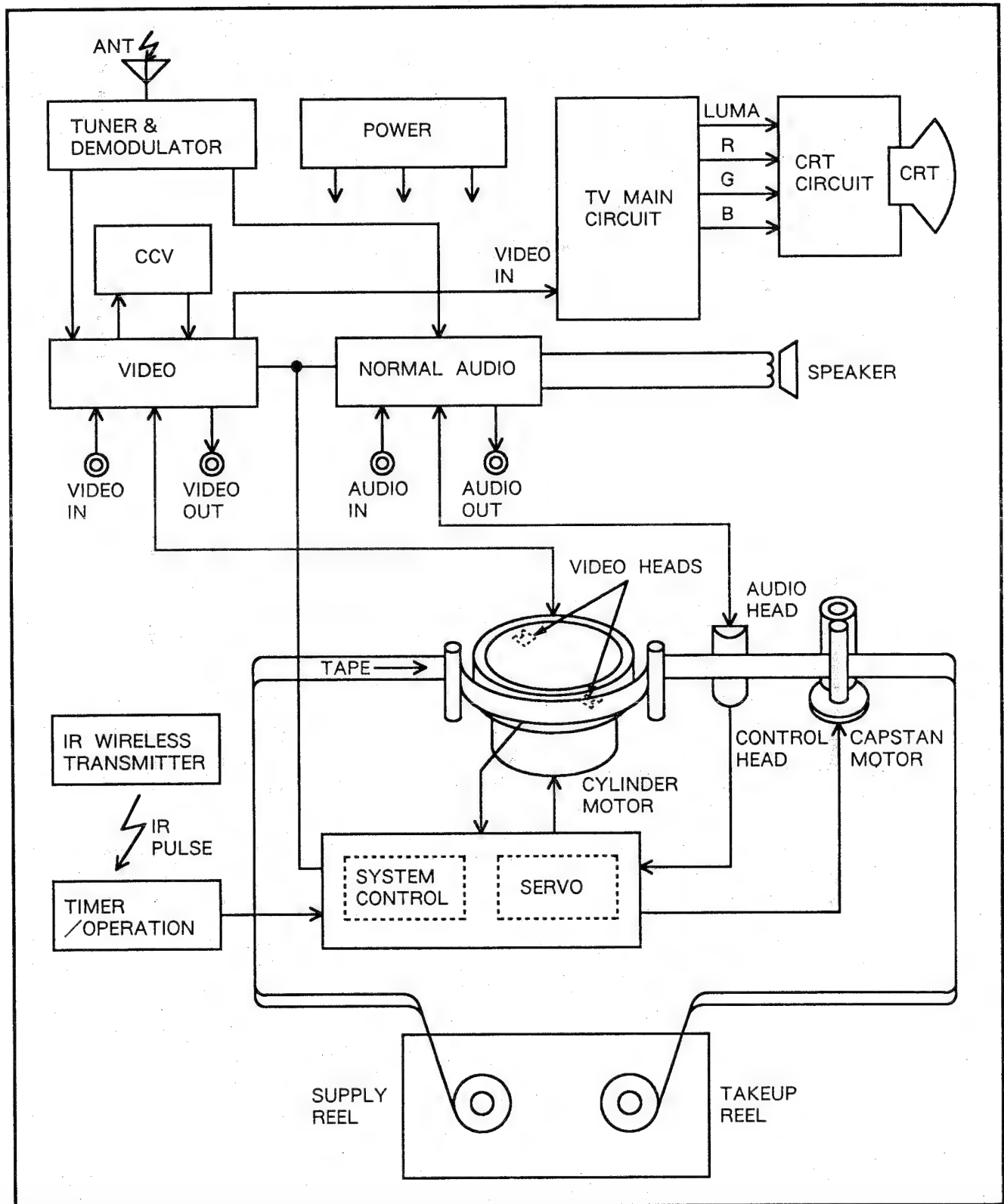
(E15, E23, E24, E25, E27, E35, E46, E55, E56, E62, E63, E64, E65, E66)

Ref. No.	Part No.	Part Name & Description	Pcs/ Set	Remarks
		MISCELLANEOUS		
E62	TMM77413	CLAMPER	1	AKEI
E66	TUC77603-1	GROUNDING PLATE	1	AKEI
E63	TUX77809	CLAMPER	1	AKEI
E15	VJSS0164	FUSE HOLDER	2	
E64	XTW3+10J	TAPPING SCREW 3X10	2	
E65	XYE3+EJ10	SCREW WITH WASHER 3X10	1	
E35	XYN3+F10S	SCREW WITH WASHER 3X10	1	
		ELECTRICAL PARTS LOCATED ON CHASSIS		
SW1551 (E27)	VSS0129	MODE SELECT SWITCH	1	
E46	VEKS4798	SAFETY TAB SWITCH UNIT	1	
E23	VEPS0482A1	FE HEAD C.B.A. UNIT	1	
E24	VJBS00949	LOADING MOTOR P.C.B.	1	
E25	VJWS7AB107LL	FLAT CABLE 7P	1	
E55	VJWS7AN120BB	FLAT CABLE 7P	1	
	(A, B, C, D)			
E55	VJWSBAB110BB	FLAT CABLE 11P		
	(E, F, G, H)			
E56	VJWS7AB110BB	FLAT CABLE 7P	1	
	(A, B, C, D)			
		"E" ITEM NUMBERS IN THE ELECTRICAL PARTS LIST		
E1	VEPS02223A1	MAIN C.B.A.		
E1	VEPS02223B1	MAIN C.B.A.		
E1	VEPS02223C1	MAIN C.B.A.		
E2	VEPS01039A1	POWER SUPPLY ASS'Y		
E3	VEPS07571A1	OPERATION I C.B.A.		
E3	VEPS07573A1	OPERATION I C.B.A.		
E4	VEPS07572A1	OPERATION II C.B.A.		
E4	VEPS07574A1	OPERATION II C.B.A.		
E5	VEPS02178A1	CAPSTAN MOTOR DRIVE C.B.A.		
E6	VEPS0563CA1	HEAD AMP ASS'Y		
E6	VEPS0564CA1	HEAD AMP ASS'Y		
E7	TNP71920CC	TV MAIN C.B.A.		
E7	TNP71922CC	TV MAIN C.B.A.		
E8	TNP73135AA	CRT C.B.A.		
E8	TNP73139AA	CRT C.B.A.		
E9	TNP73136BB	TV POWER C.B.A.		
E9	TNP73140BB	TV POWER C.B.A.		
E10	VEPS03125C2	CCV C.B.A.		
E11	VJHS0279	PIN JACK		
E12	VEQS0562	UHF/VHF TUNER/TV DEMODULATOR UNIT		
E13	VGPS2941	ANT TERMINAL PLATE		
E13	VGPS2943	ANT TERMINAL PLATE		
E14	VSCS1984	SHIELD CASE -TOP		
E15	VJSS0164	FUSE HOLDER		
E16	VSCS2036	SHIELD CASE -BODY		
E19	SPS-420-2-B	IR WIRELESS RECEIVING DETECTOR		
E20	TUC77622	V-SUB HEAT SINK		
E21	VMXS0583	LED SPACER		
E23	VEPS0482A1	FE HEAD C.B.A. UNIT		
E24	VJBS00949	LOADING MOTOR P.C.B.		
E25	VJWS7AB107LL	FLAT CABLE 7P		
E27	VSS0129	MODE SELECT SWITCH		
E29	VEKS5200	PHOTO SENSOR UNIT		
E30	VEKS5201	SENSOR LED UNIT		
E35	XYN3+F10S	SCREW WITH WASHER 3X10		
E39	VMXS0575	LED SPACER		
E41	TMM77412	CLAMPER		
E42	TJSA5050	CRT SOCKET		
E42	TJSA5081	CRT SOCKET		
E43	TXAJT01134	FOCUS/SCREEN COUPLER		
E45	VMTS0035	CUSHION		
E46	VEKS4798	SAFETY TAB SWITCH UNIT		
E47	TUC76677-1	HEAT SINK PLATE		
E47	TUC76677-2	HEAT SINK PLATE		
E48	XYN3+F6S	SCREW WITH WASHER 3X6		
E49	XYN3+F12S	SCREW WITH WASHER 3X12		
E50	XTV3+10G	TAPPING SCREW 3X10		

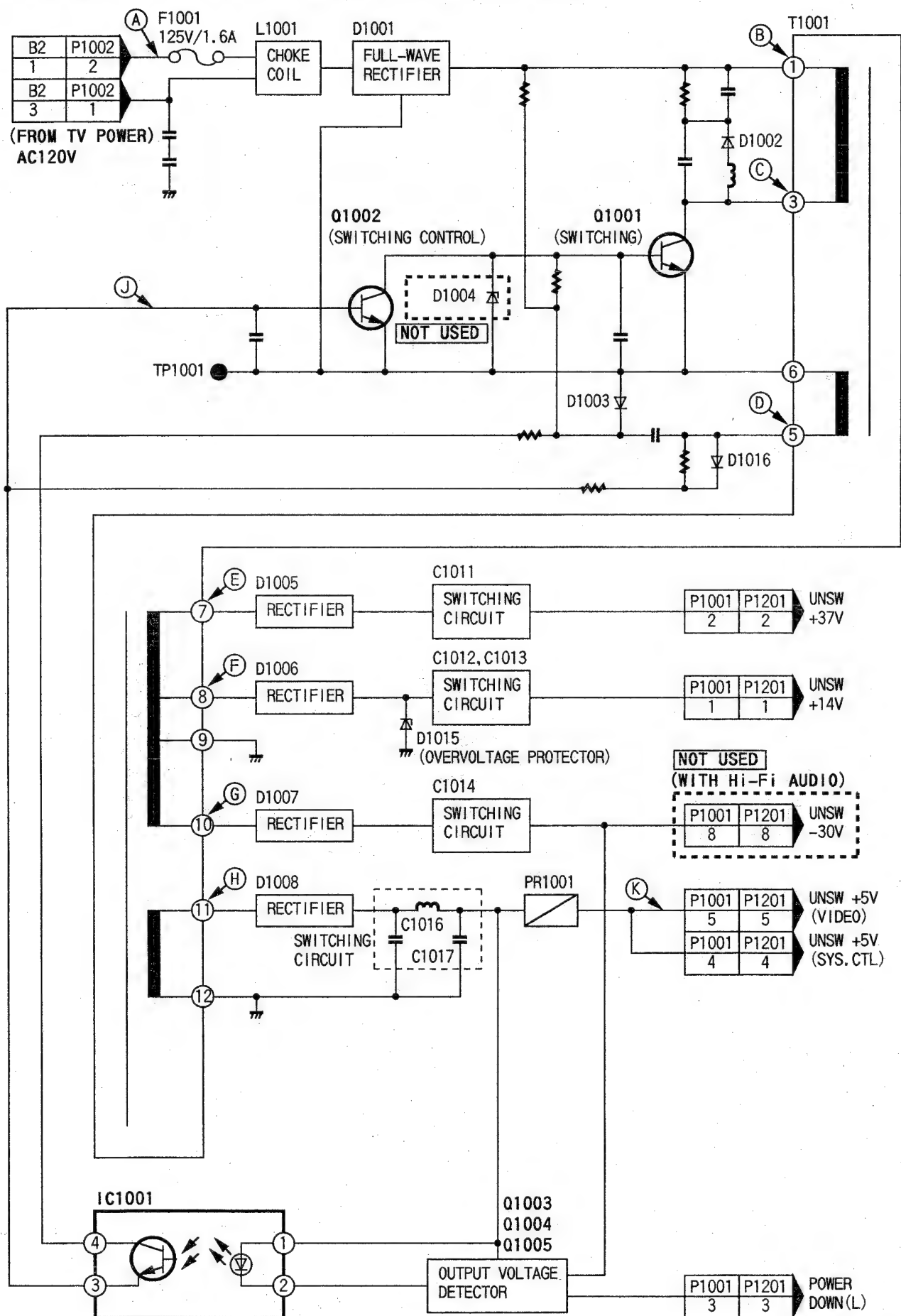
Ref. No.	Part No.	Part Name & Description	Pcs/ Set	Remarks
E51	VHDS0276	SCREW 3X10		
E52	VHDS0319	SCREW 3X12		
E53	2SD1555LBMV			
E54	LA7835	IC BIPOLAR LINEAR VERTICAL OUT		
E54	LA7835-TA	IC BIPOLAR LINEAR VERTICAL OUT		
E55	VJWSBAB110BB	FLAT CABLE 11P		
E55	VJWS7AN120BB	FLAT CABLE 7P		
E56	VJWS7AB110BB	FLAT CABLE 7P		
E57	TLF14767F	FLYBACK TRANSFORMER		
E57	TLF15624F1	FLYBACK TRANSFORMER		
E59	TMM16480-1	CLAMPER		
E60	TUC77619	HEAT SINK PLATE		
E61	TUC77621	H-SUB HEAT SINK		
E62	TMM77413	CLAMPER		
E63	TUX77809	CLAMPER		
E64	XTW3+10J	TAPPING SCREW 3X10		
E65	XYE3+EJ10	SCREW WITH WASHER 3X10		
E66	TUC77603-1	GROUNDING PLATE		
E66	TUC77616	GROUNDING PLATE		
E67	VZFS0006	CLAMPER		
E67	VZFS0006S	CLAMPER		
E68	VEKS5221	LUG ASS'Y		
E69	STR30130	IC BIPOLAR LINEAR ERROR VOLTAGE DET		
E70	VJWS2AW220MM	FLAT CABLE 2P		
E73	TMM77405	CLAMPER		
E74	VMTS0094	CUSHION		
E78	VSCS2007	SHIELD CASE -TOP		
E79	VSCS2008	SHIELD CASE -BOTTOM		
E81	VEPS04117A1	AUDIO/VIDEO JACK C.B.A.		

VII. BLOCK DIAGRAMS

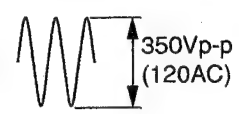
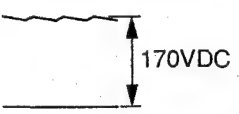
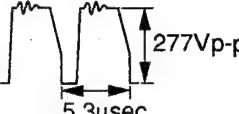


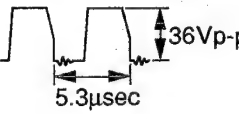


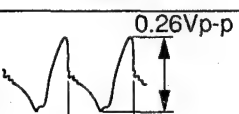
OVERALL BLOCK DIAGRAM



POWER SUPPLY BLOCK DIAGRAM



WAVEFORM OF POWER SUPPLY STAGE

No	WAVEFORM	NOTE	No	WAVEFORM	NOTE	No	WAVEFORM	NOTE
Ⓐ			Ⓑ		TP1001	Ⓒ		TP1001
Ⓓ		TP1001	Ⓔ		CHASSIS GND	Ⓕ		CHASSIS GND
Ⓖ		CHASSIS GND	Ⓗ		CHASSIS GND			
Ⓙ		TP1001						

NOTE: WAVEFORMS MEASURED IN STOP MODE.

POWER SUPPLY CHECKING PROCEDURE 1

SYMPTOM	FLOW OF TROUBLESHOOT →							
No Power (Secondary circuit)	CHECK POINT	Ⓚ	Ⓔ	Ⓕ	Ⓖ	Ⓗ		
	IF NO.	↓	↓					
	CHANGE	PR1001	* NOTE1				* NOTE2	

* NOTE1: If voltage is not correct, check primary circuit.

* NOTE2: If all voltage is correct, check System Control circuit or adjust Gear phase.

SYMPTOM	FLOW OF TROUBLESHOOT →							
No Power (Primary circuit)	CHECK POINT	Ⓐ	Ⓑ	Ⓒ	Ⓓ	Ⓙ		
	IF NO.	↓	↓					
	CHANGE	* NOTE1	F1001 Q1001 * NOTE2 Q1002					

* NOTE1: Check TV Power Circuit or AC cord.

* NOTE2: Change Q1001, Q1002 and F1001 at the same time.

SYMPTOM	FLOW OF TROUBLESHOOT →							
	CHECK POINT							
	IF NO.							
	CHANGE							

NOTE: Please use blank brackets to note additional information.

POWER SUPPLY CHECKING PROCEDURE 2

(1). SHORT-CIRCUIT AND REPLACEMENT PARTS ON POWER LINE.

	CONDITION OF SHORT-CIRCUIT	DAMAGEABLE PARTS BY SHORT-CIRCUIT
(1)	5V ⇒ GND	*PR1001, *D1008, Q1005
(2)	37V ⇒ GND	*D1005, *R1010
(3)	14V ⇒ GND 12V ⇒ GND	D1006, *D1015, Q1201, *Q1202, R1209 D1201, D1202, D1203, D1204, C1012, *PR1203
(4)	-30V ⇒ GND	*R1011, *D1007
(5)	37V ⇒ 14V	D1006, *D1015, Q1201, *Q1202 D1201, D1202, D1203, D1204, *PR1203
(6)	-30V ⇒ 5V	REPLACE THE ALL OF PARTS OF (1) AND (4)
(7)	14V ⇒ 12V	*Q1201, *Q1202, D1201, D1202, D1203, D1204, *PR1203
(8)	37V ⇒ POWER DOWN(L)	*Q1005

*NOTE1: When parts are short circuited, supplying the Power for a long time may cause the fuse to blow.

*NOTE2: In case of trouble on Power Pack only, no need to check 1200 series parts.

*NOTE3: Parts with * mark are most susceptible to damage in case of short circuit. Please check them first.

(2). IN CASE OF FUSE(F1001) BLOW.

Replace Parts F1001, Q1001, Q1002, D1001(Very rarely has problems), C1012, D1015.

Cause ⇒ It may be caused by a short-circuit of 5V or 14V.

(3). JUST AFTER TURNING POWER ON, ABNORMAL NOISE CAN BE HEARD FROM POWER SUPPLY UNIT.

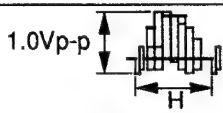
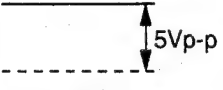
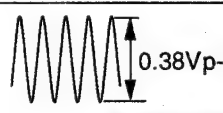
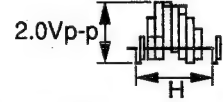
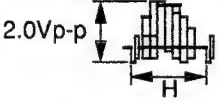
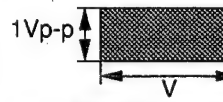
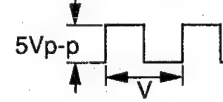
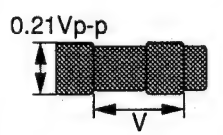
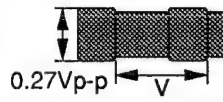
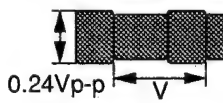
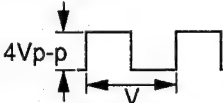
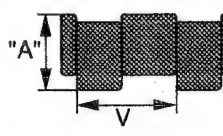
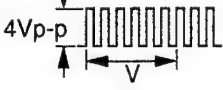

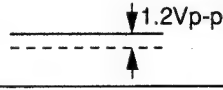
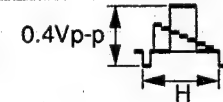
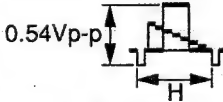
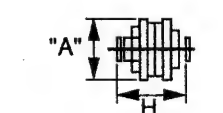
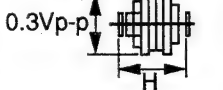

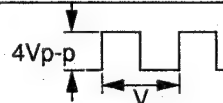
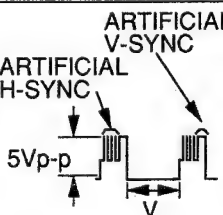
Replace Parts D1015, D1008, D1007, R1011, C1012.

Cause ⇒ It may be caused by a short-circuit of 5V, -30V, 14V.

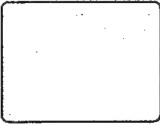
In such a condition, supplying the Power for a long time causes the fuse to blow.

WAVEFORM OF VIDEO STAGE

*NOTE: 1. The measurement mode of the waveforms in brackets on this chart is Record and Playback modes with NTSC color bar signal.
2. Please use blank brackets to note additional information.

No	WAVEFORM	NOTE	No	WAVEFORM	NOTE	No	WAVEFORM	NOTE
(A)		REC	(B)		LINE(H) /TUNER(L)	(C)		
(D)		REC/P.B	(E)		REC/P.B	(F)		REC
(H)			(I)		REC (SP/LP /SLP)	(O)		P.B
(P)		REC (SP/LP /SLP)	(Q)		STILL SP			
		P.B SP "A"= 0.49Vp-p LP "A"= 0.33Vp-p SLP "A"= 0.25Vp-p			CUE/REV			
					PB (SLP(H))			
					PB (SP(L))			
(a)		P.B	(b)		P.B			
(c)		REC "A"= 0.5Vp-p P.B "A"= 0.6Vp-p	(d)		REC/P.B	(e)		REC/P.B
(f)			(g)		CUE/REV /SLOW /STILL			

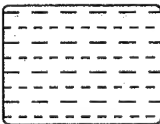
VIDEO CHECKING PROCEDURE

SYMPTOM	FLOW OF TROUBLESHOOT →							
 NO PIX	CHECK POINT	Ⓐ	Ⓓ	Ⓔ	TV			
	IF NO.	↓	↓	↓	↓			
	CHANGE	* NOTE1	IC3001 * NOTE2	IC3301 CCV Circuit	* NOTE3			

* NOTE1: Check Tuner/Demodu or Video In Terminal and signals (B).

* NOTE2: Check signals EE(H) /VV(M) /Trick(L).

* NOTE3: Check TV Main Circuit or Video Out Terminal.

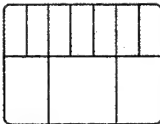
SYMPTOM	FLOW OF TROUBLESHOOT →							
 NO REC	CHECK POINT	Ⓐ	Ⓕ	Ⓖ	Ⓗ	Ⓘ	Ⓙ	HEAD
	IF NO.	↓	↓	↓	↓	↓	↓	↓
	CHANGE	* NOTE1	IC3001 * NOTE2	IC6001 * NOTE3	HEAD AMP			UPPER CYLINDER * NOTE4

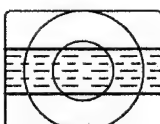
* NOTE1: Check Tuner/Demodu or Video In Terminal and signals (B).

* NOTE2: Check signals (c), EE(H) /VV(M) /Trick(L).

* NOTE3: Check Cylinder FG/PG signal at pin 47 of IC6001.

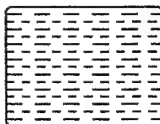
* NOTE4: Try head cleaning.

SYMPTOM	FLOW OF TROUBLESHOOT →							
 NO COLOR	CHECK POINT	Ⓖ	Ⓒ	Ⓓ				
	IF NO.	↓	↓	↓				
	CHANGE	HEAD AMP	IC3201					

SYMPTOM	FLOW OF TROUBLESHOOT →							
 WIDE NOISE BAND	CHECK POINT	Ⓚ	Ⓛ	Ⓜ	Ⓝ	Ⓗ	Ⓠ	—
	IF NO.		↓			↓		↓
	CHANGE		UPPER CYLINDER * NOTE1			* NOTE2		SEE SERVO SECTION

* NOTE1: Try head cleaning.

* NOTE2: Check Cylinder FG/PG signal at pin 47 of IC6001.

SYMPTOM	FLOW OF TROUBLESHOOT →							
 PB NOISE (SNOW)	CHECK POINT	Ⓖ	Ⓓ	Ⓔ	TV			
	IF NO.	↓	↓	↓	↓			
	CHANGE	IC3001 * NOTE1	* NOTE2	IC3301 CCV Circuit	* NOTE3			

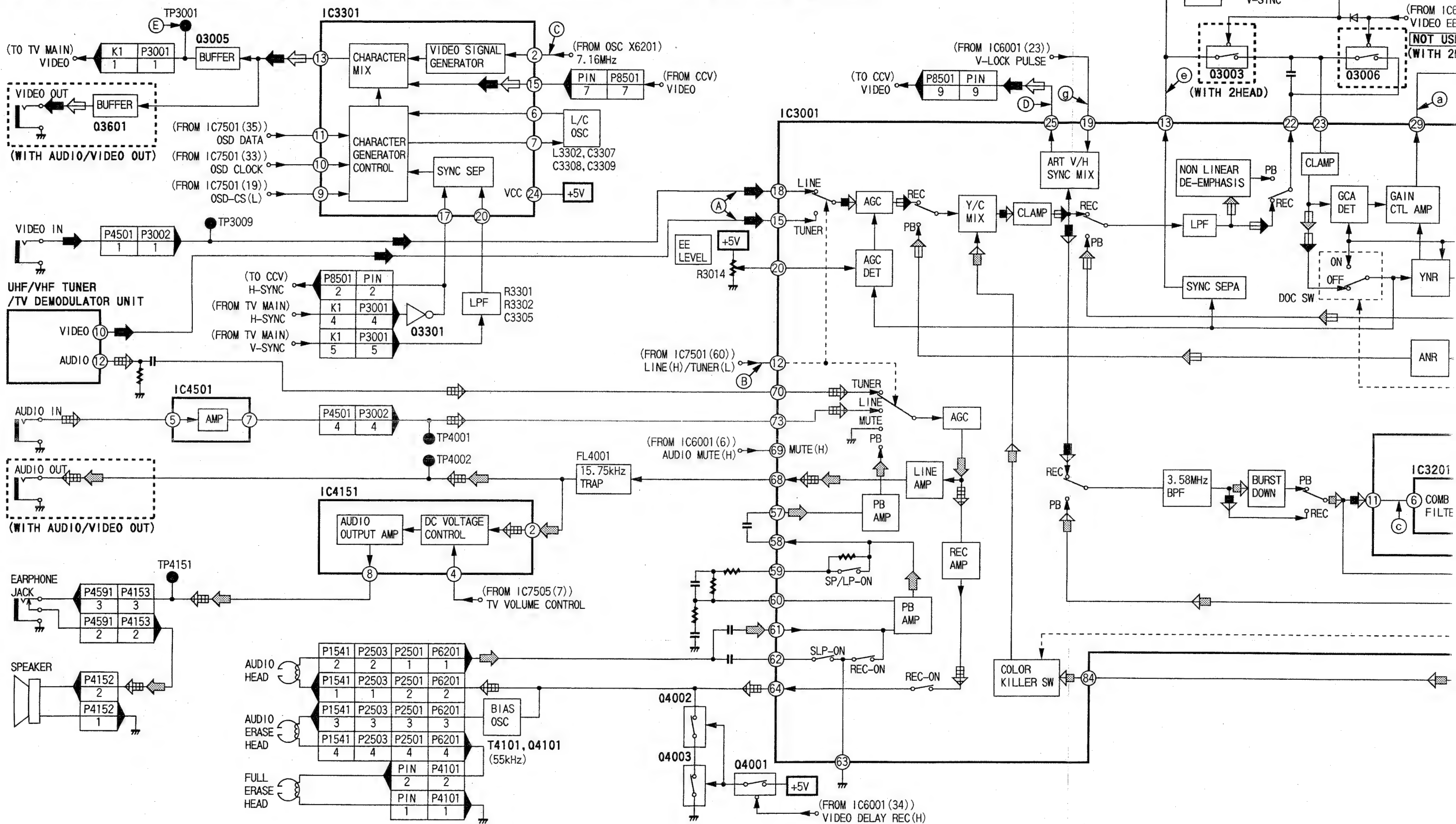
* NOTE1: Try head cleaning and check Head Amp Shield Case or signals (K) to (N), (H) and (Q).

* NOTE2: Check signals from (c).

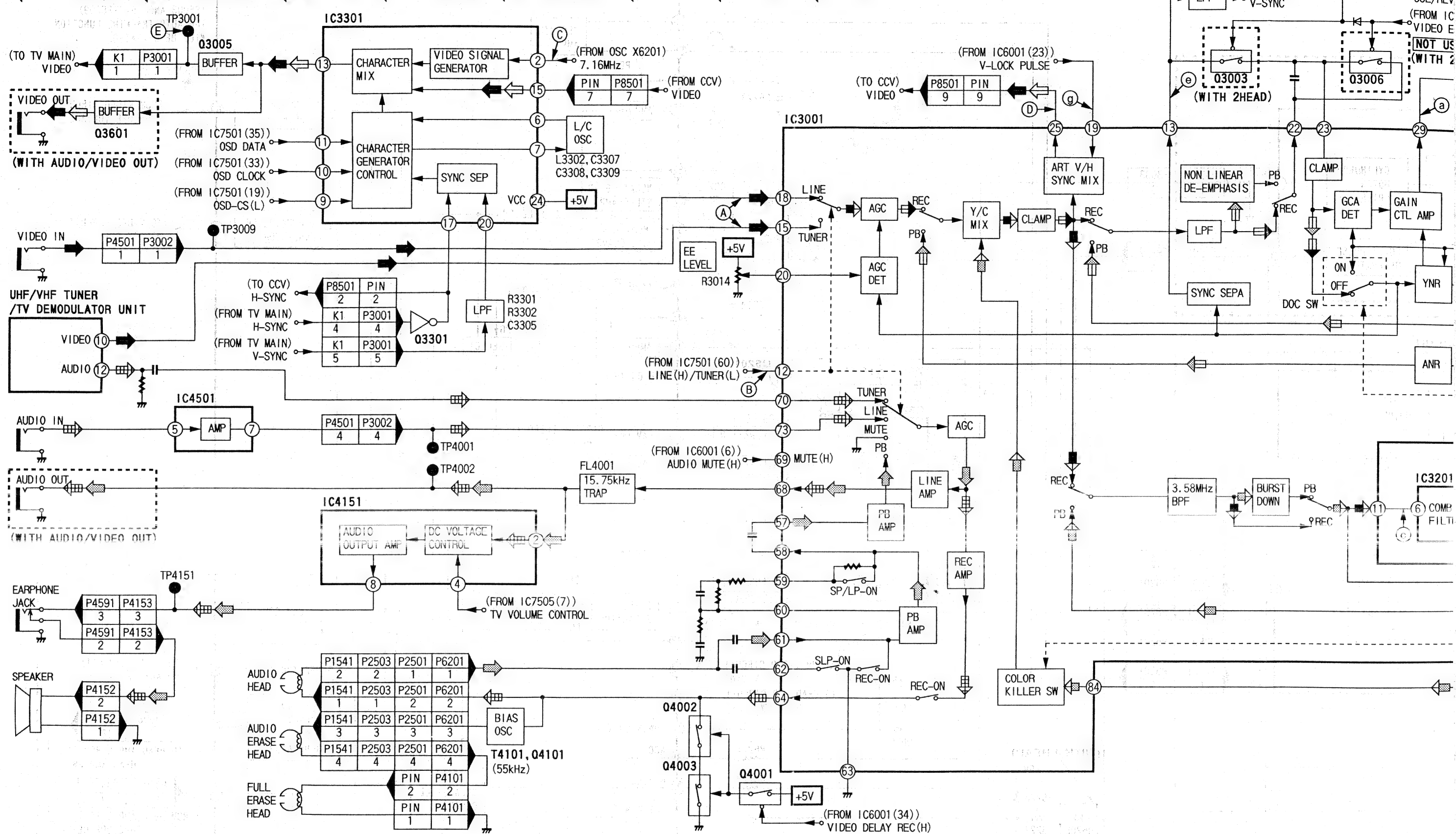
* NOTE3: Check TV Main Circuit or Video Out Terminal.

VIDEO/NORMAL AUDIO BLOCK DIAGRAM

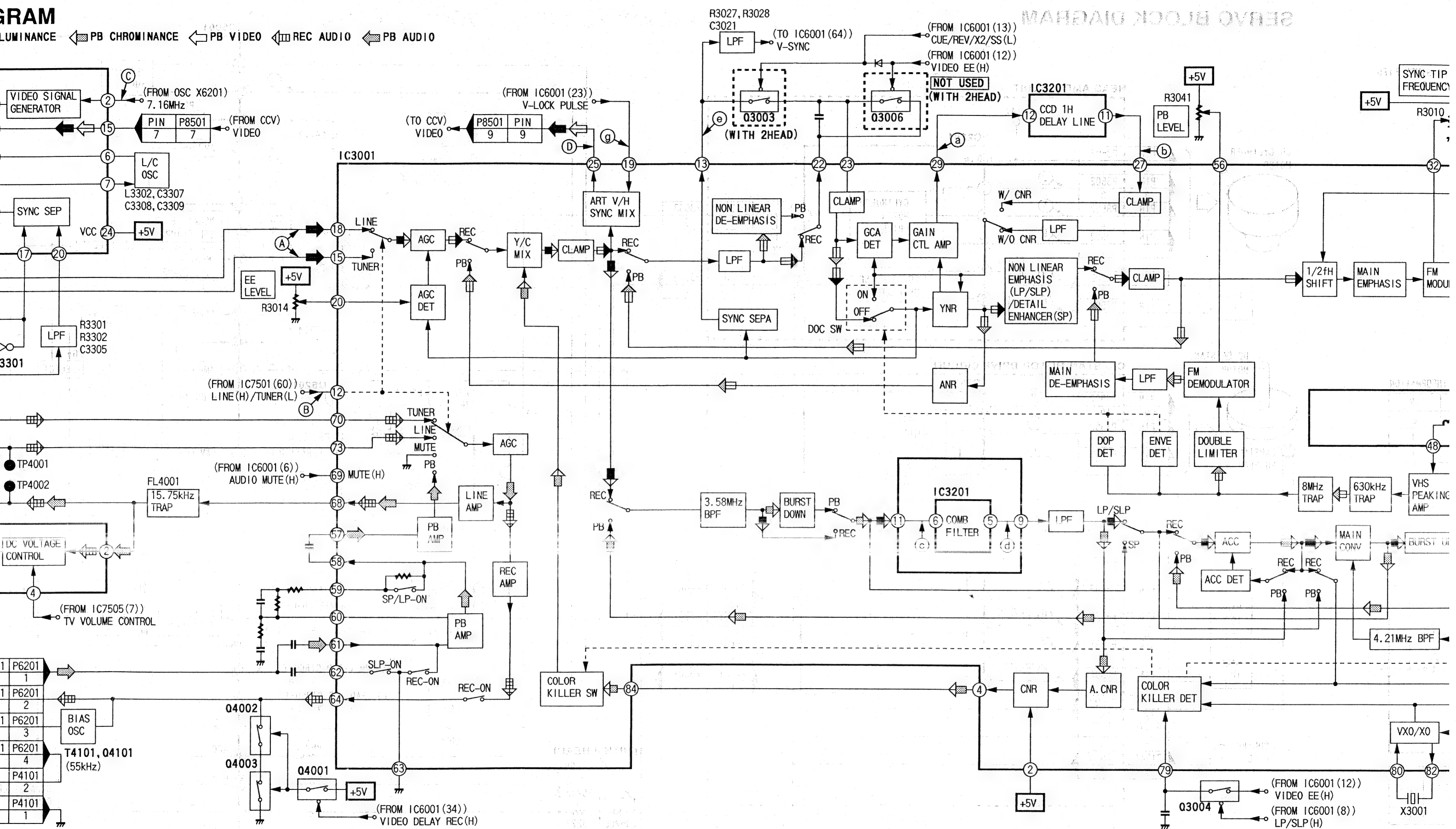
◀ REC LUMINANCE ◀ REC CHROMINANCE ◀ REC VIDEO ◀ PB LUMINANCE ◀ PB CHROMINANCE ◀ PB VIDEO ◀ REC AUDIO ◀ PB AUDIO

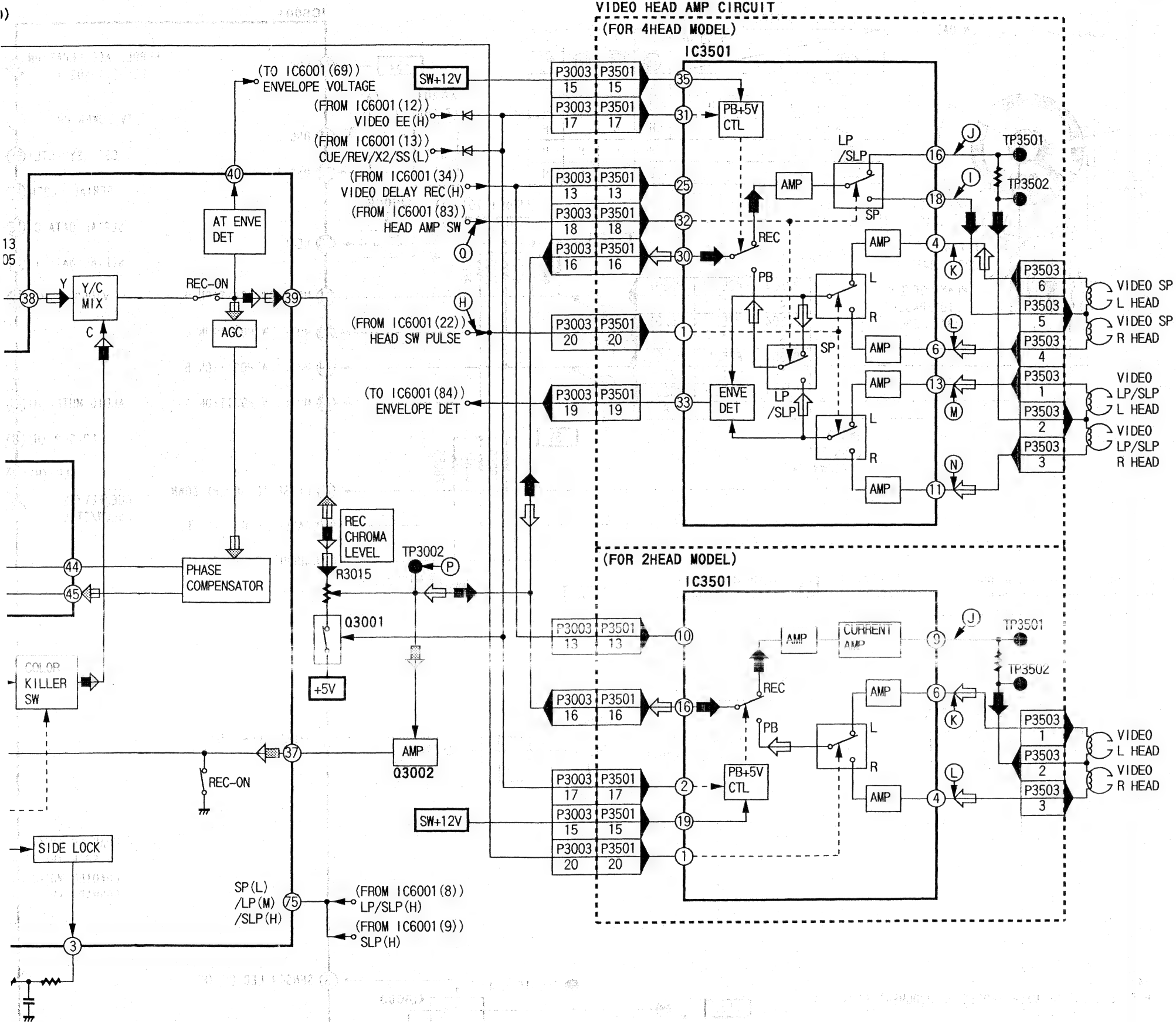


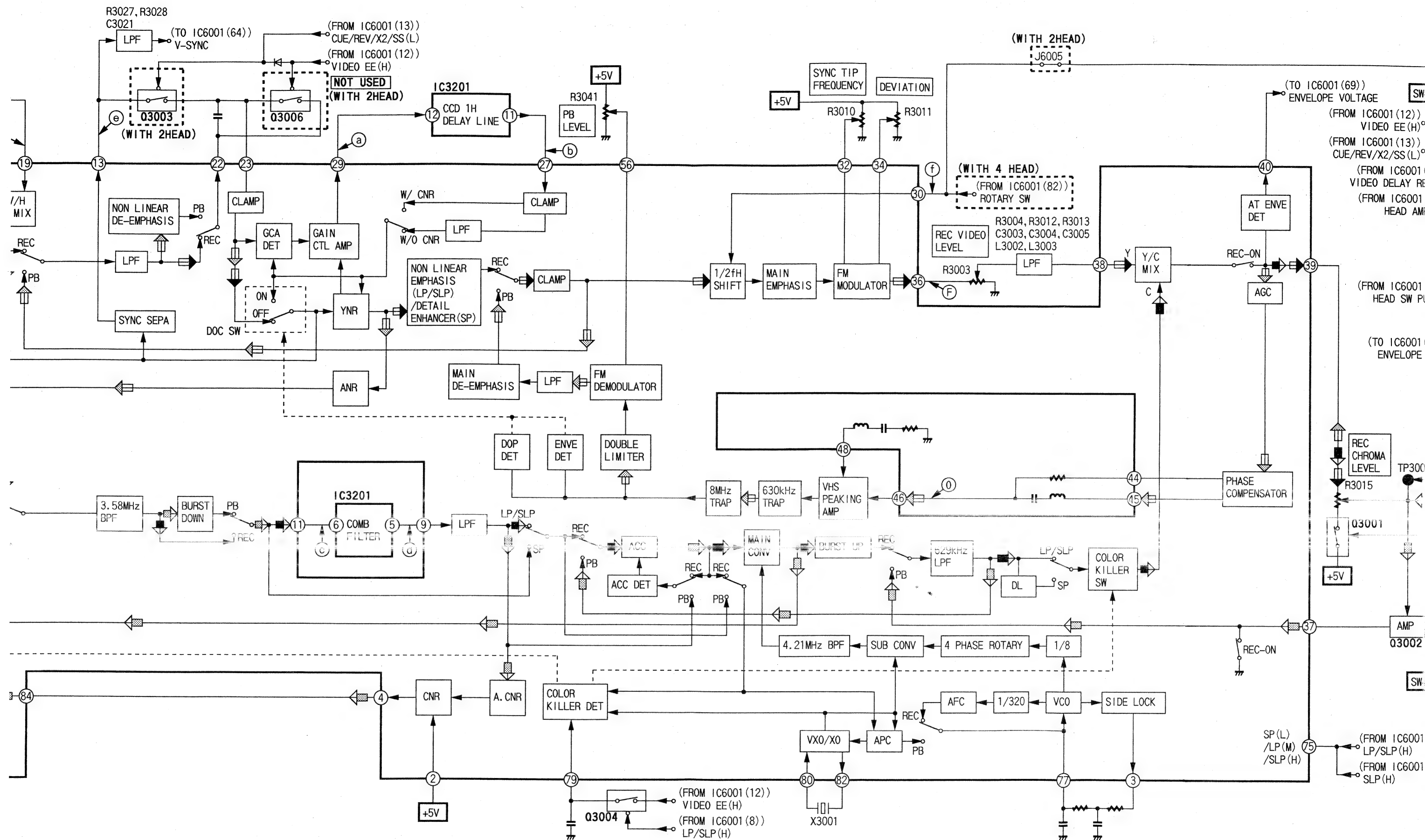
◀ REC LUMINANCE ◀ REC CHROMINANCE ◀ REC VIDEO ◀ PB LUMINANCE ◀ PB CHROMINANCE ◀ PB VIDEO ◀ REC AUDIO ◀ PB AUDIO

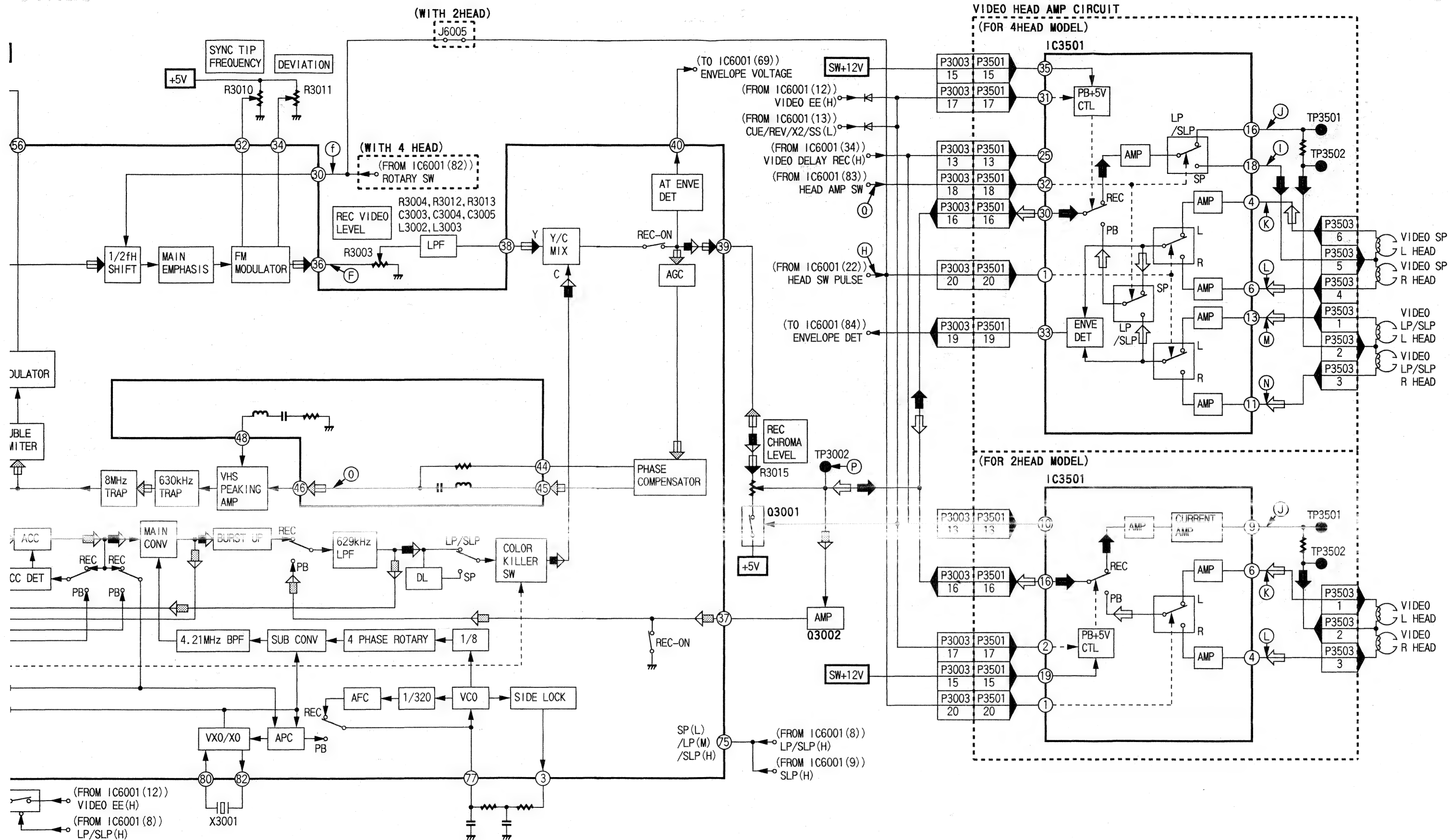


LUMINANCE ◀ PB CHROMINANCE ◀ PB VIDEO ◀ REC AUDIO ◀ PB AUDIO

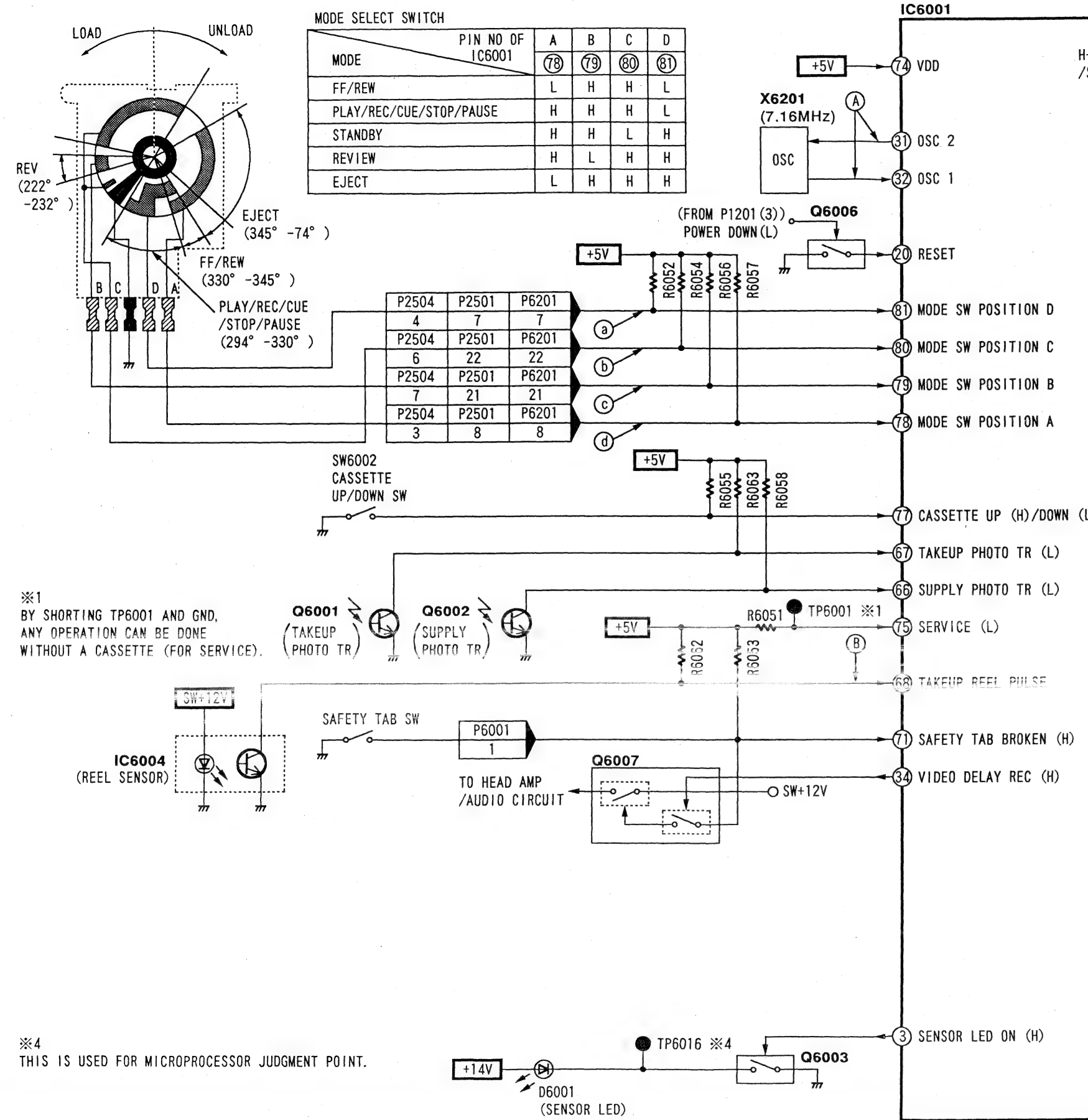








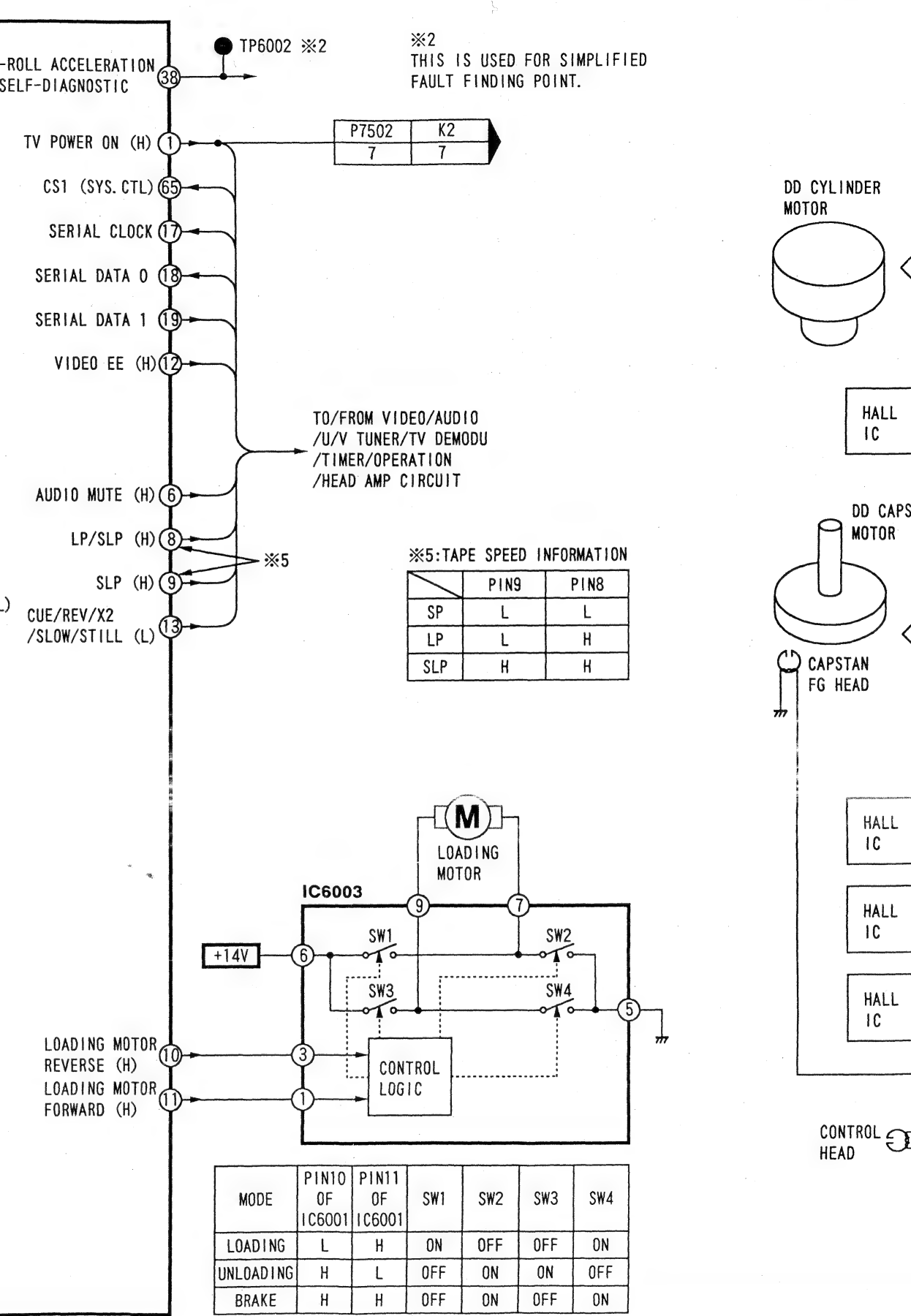
SYSTEM CONTROL BLOCK DIAGRAM



※1
BY SHORTING TP6001 AND GND,
ANY OPERATION CAN BE DONE
WITHOUT A CASSETTE (FOR SERVICE).

※4
THIS IS USED FOR MICROPROCESSOR JUDGMENT POINT.

SERVO



SERVO BLOCK DIAGRAM

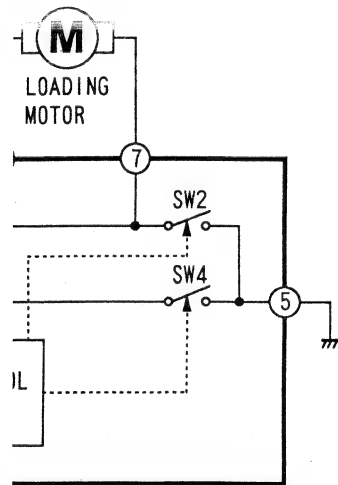
2
IS IS USED FOR SIMPLIFIED
ULT FINDING POINT.

K2
7

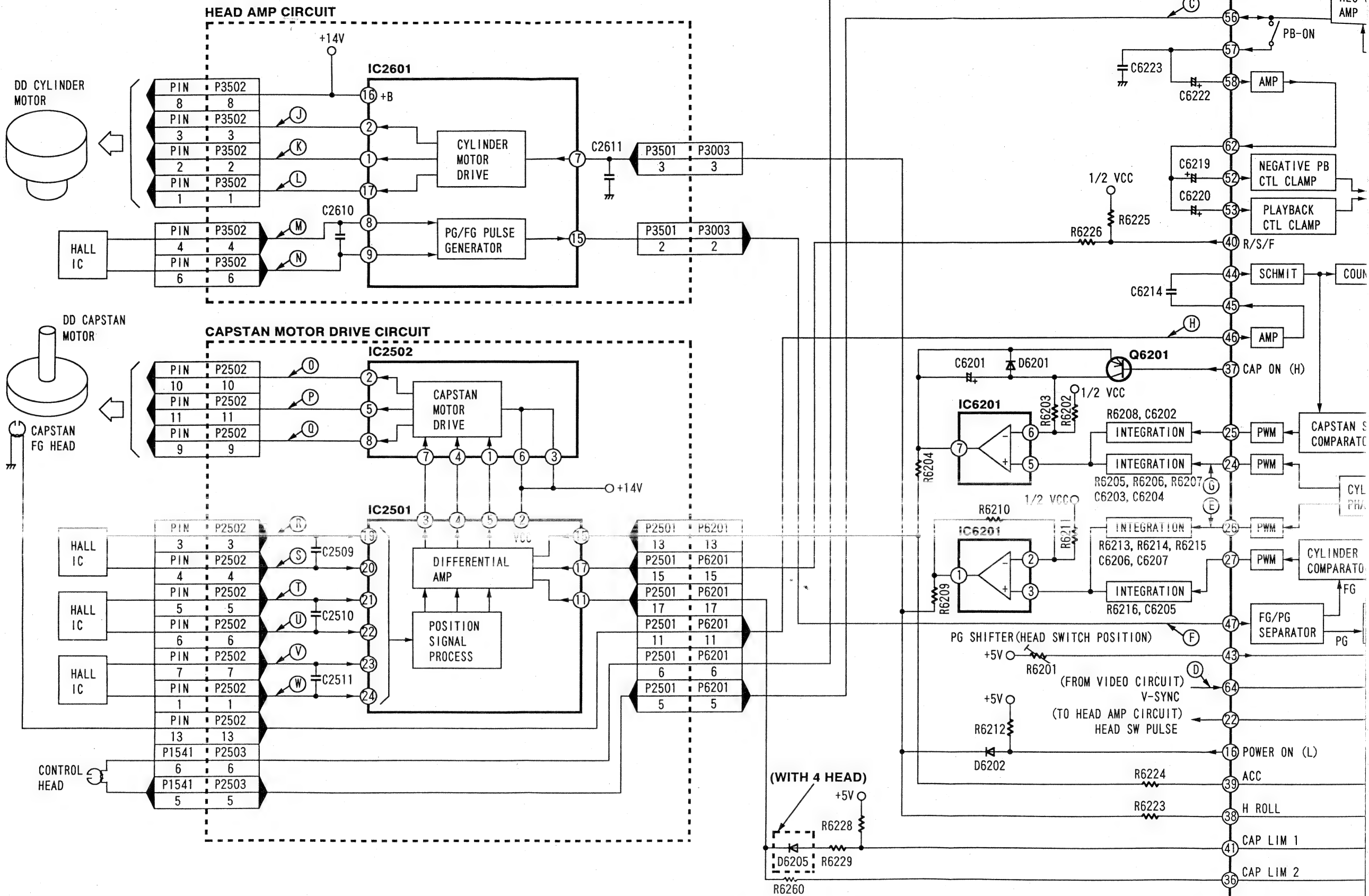
/AUDIO
DEMODU
ION
CUIT

5:TAPE SPEED INFORMATION

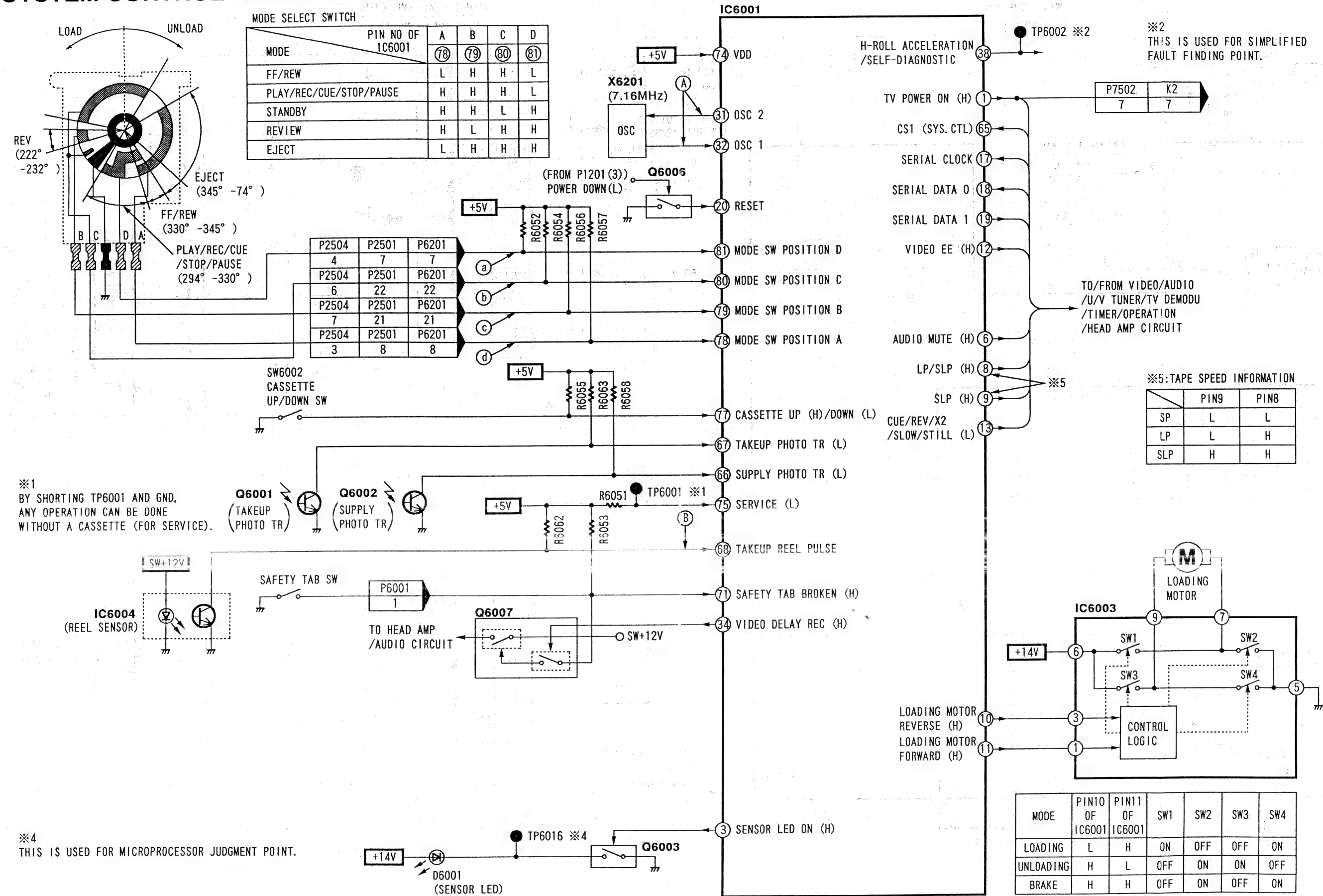
	PIN9	PIN8
SP	L	L
LP	L	H
ILP	H	H



W1	SW2	SW3	SW4
ON	OFF	OFF	ON
FF	ON	ON	OFF
FF	ON	OFF	ON



SYSTEM CONTROL BLOCK DIAGRAM



Wiring Diagram

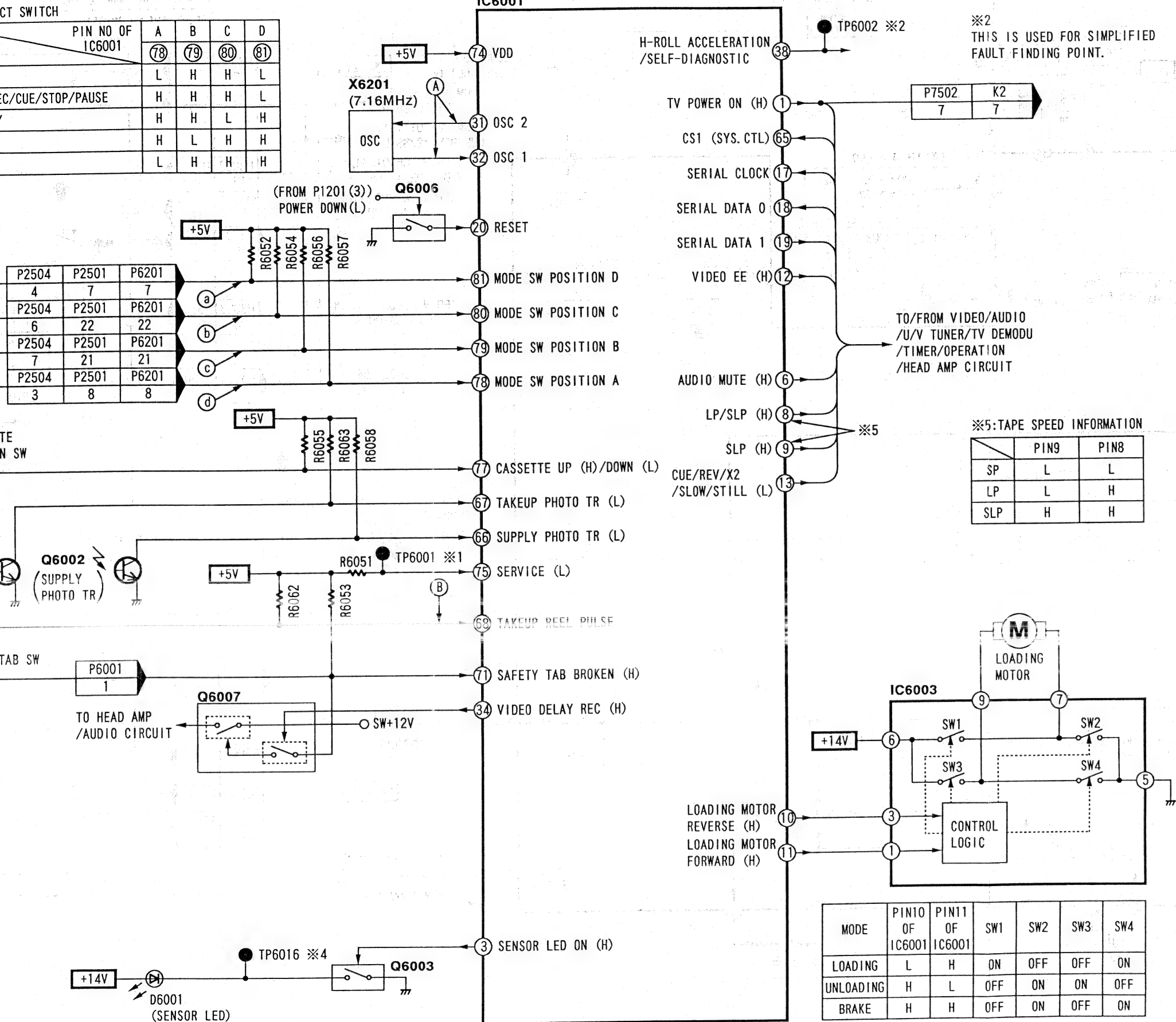
CT SWITCH

PIN NO OF IC6001	A	B	C	D
	(78)	(79)	(80)	(81)
	L	H	H	L
EC/CUE/STOP/PAUSE	H	H	H	L
	H	H	L	H
	L	H	H	H

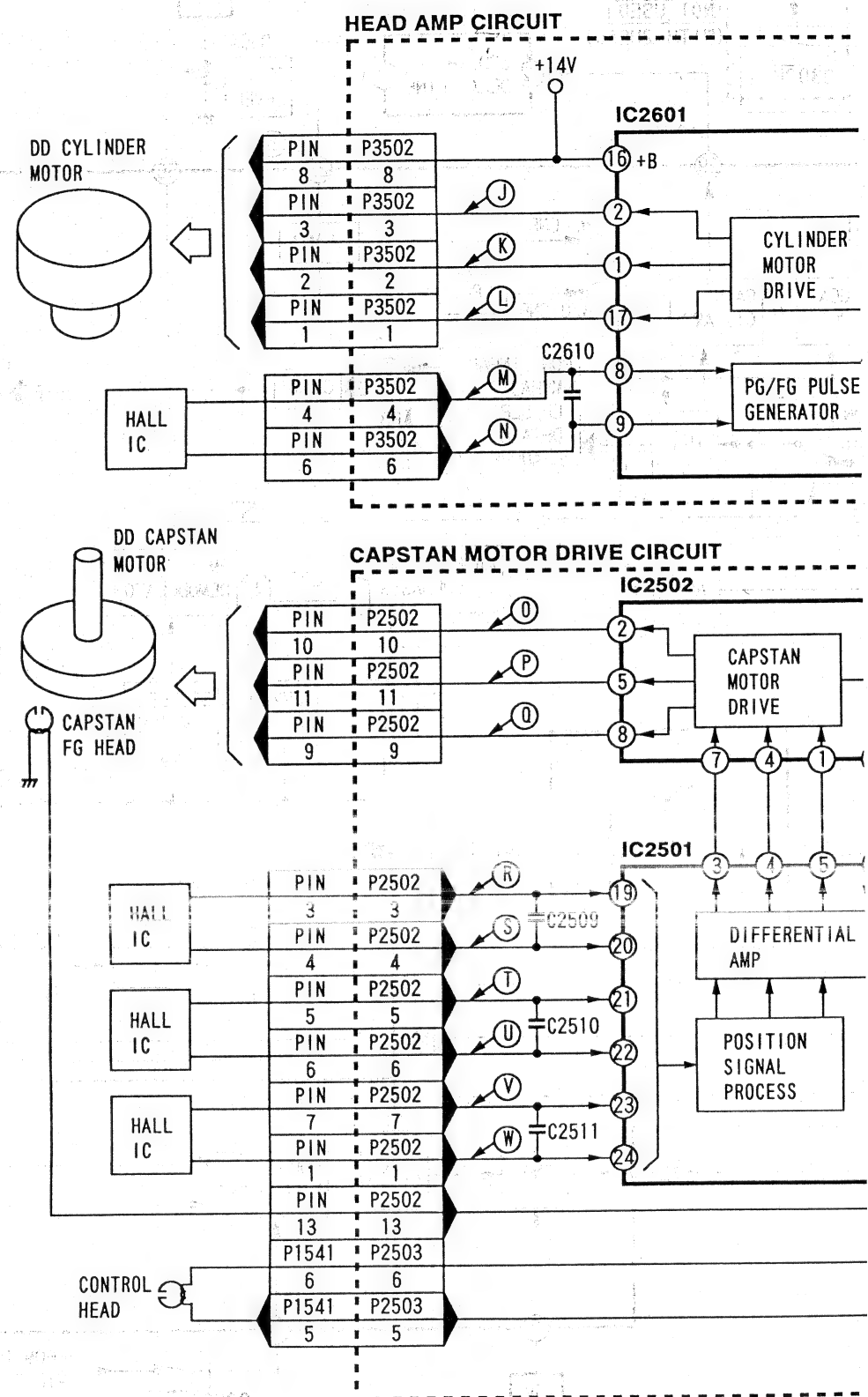
P2504	P2501	P6201
4	7	7
P2504	P2501	P6201
6	22	22
P2504	P2501	P6201
7	21	21
P2504	P2501	P6201
3	8	8

TE
N SW

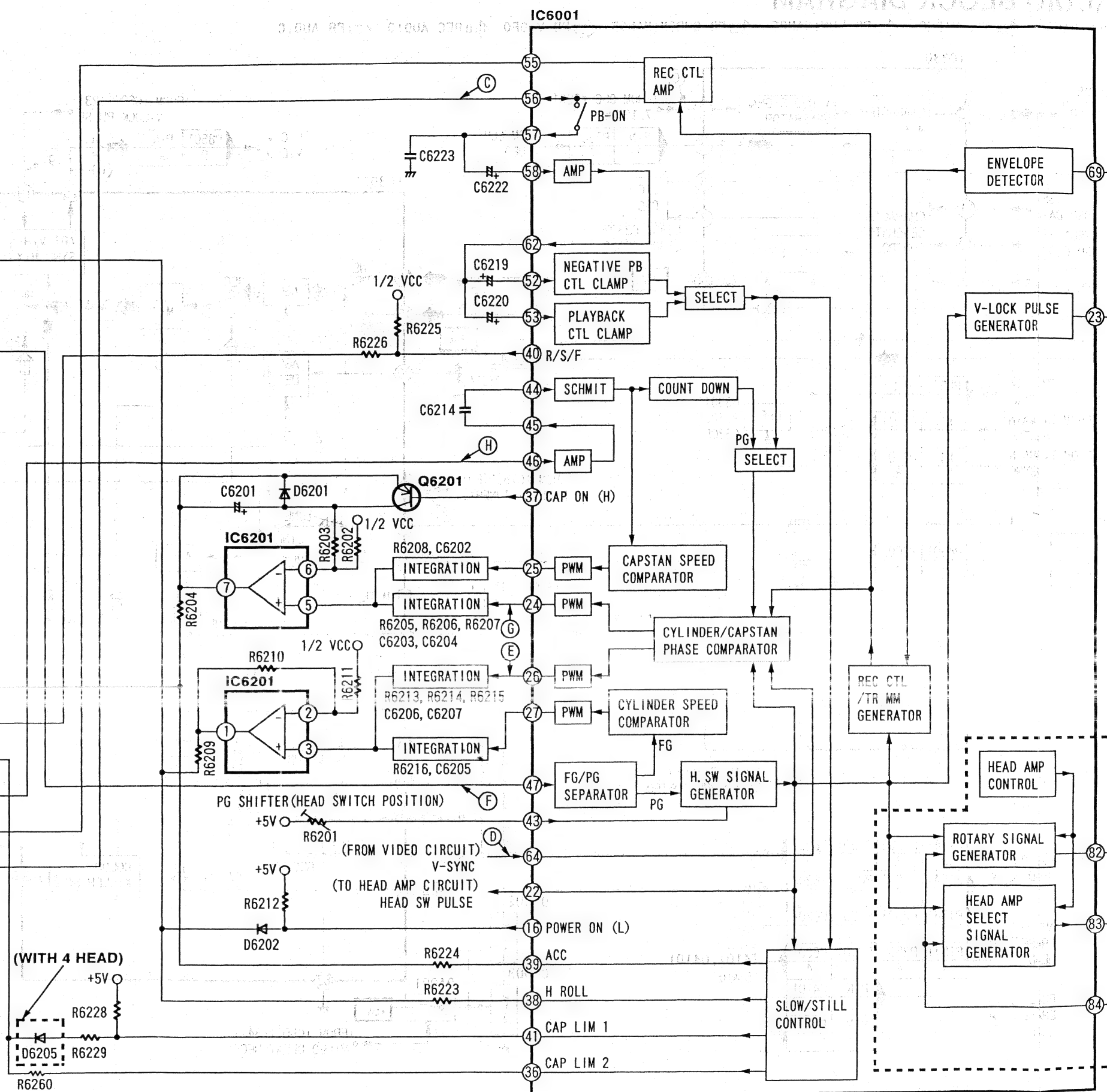
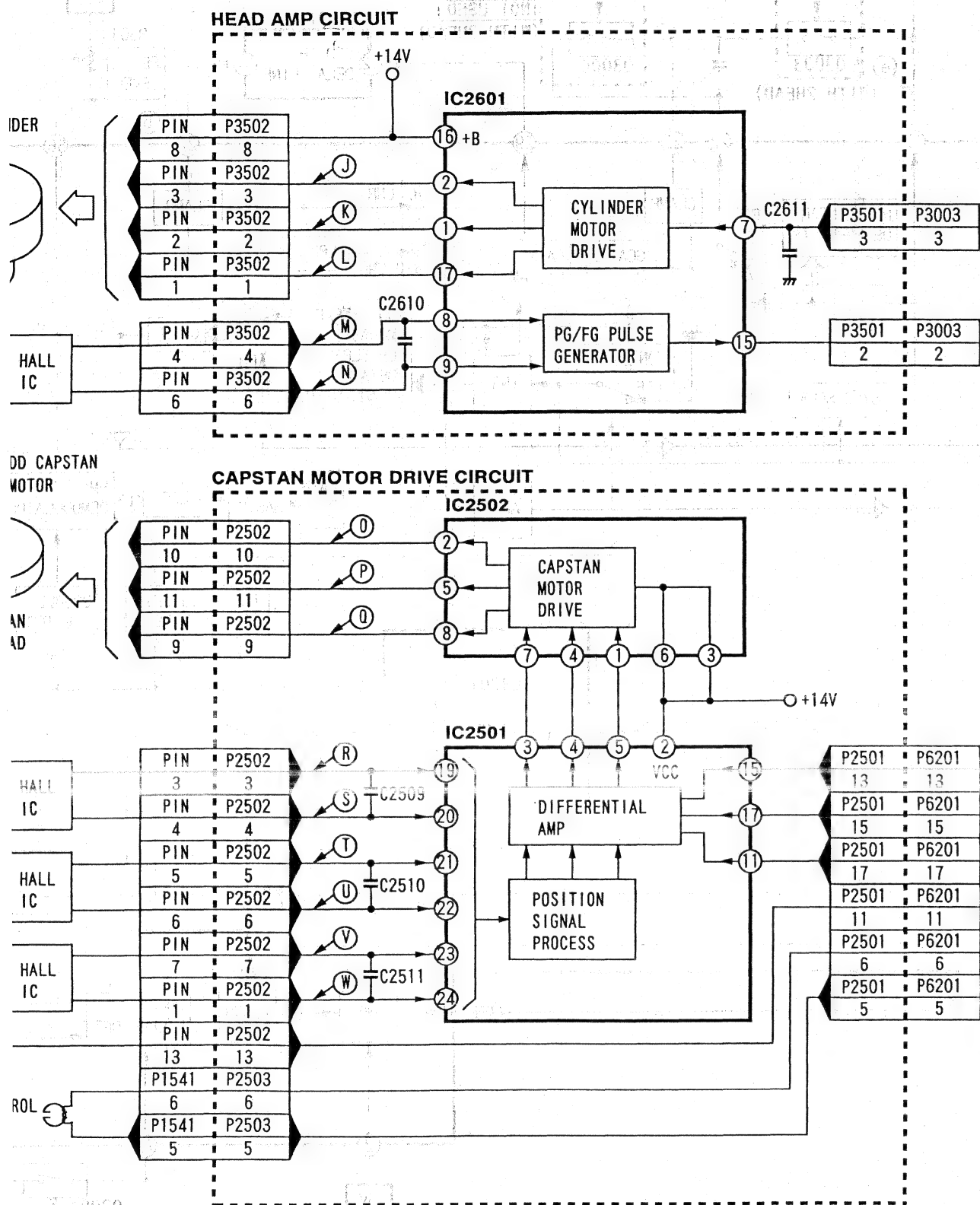
TAB SW

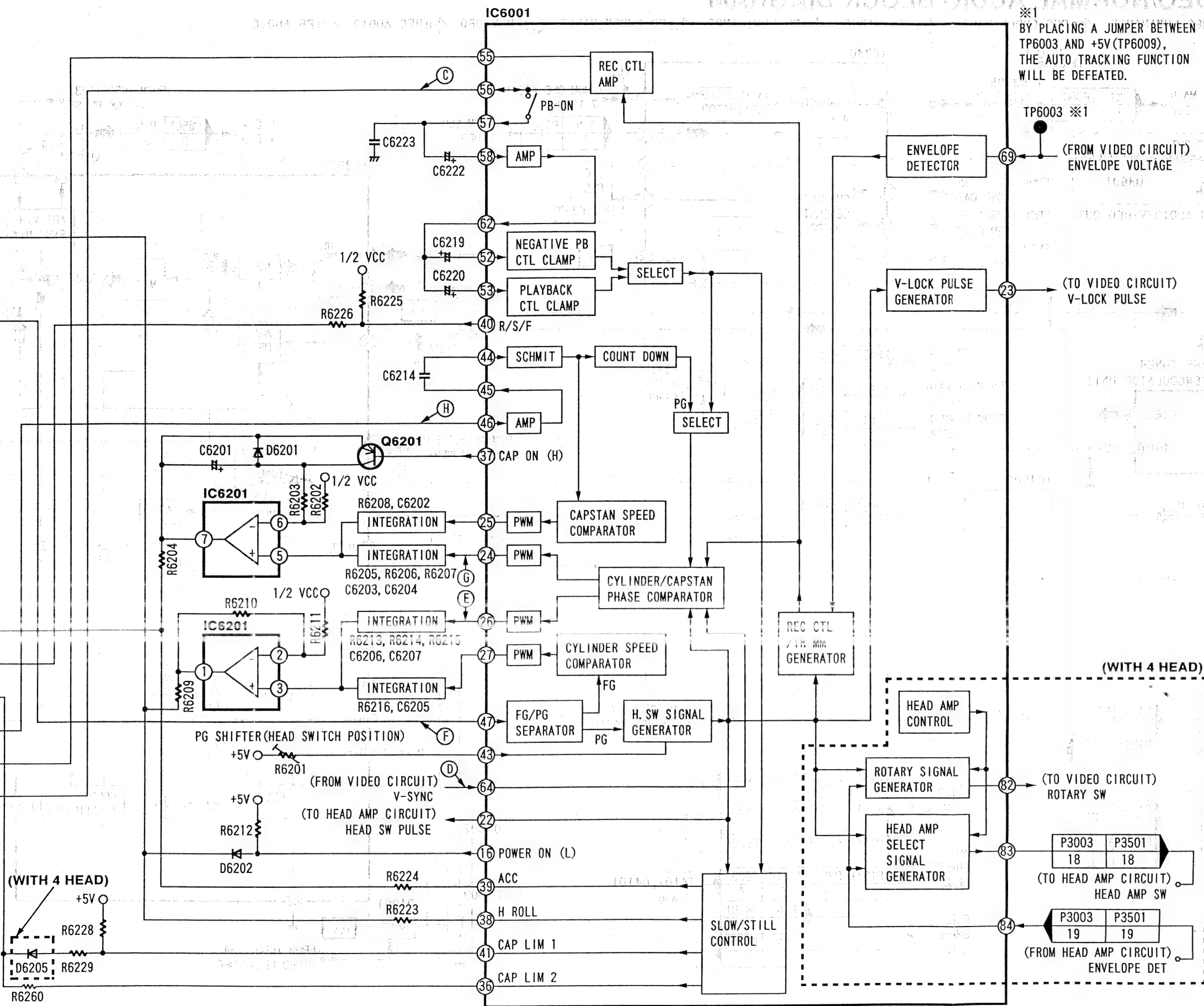


Servo Block Diagram




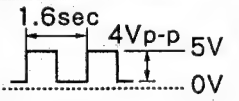
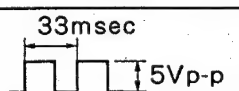

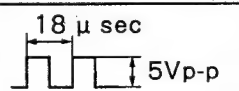
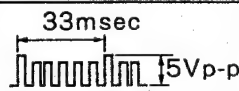
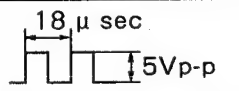
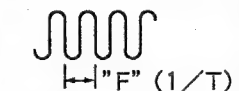

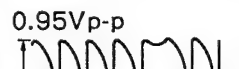
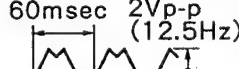
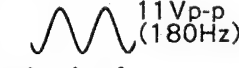
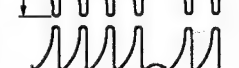



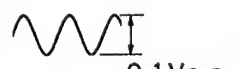
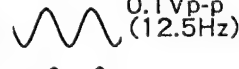


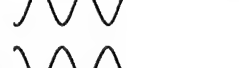

VO BLOCK DIAGRAM





※1
BY PLACING A JUMPER BETWEEN
TP6003 AND +5V (TP6009),
THE AUTO TRACKING FUNCTION
WILL BE DEFEATED.

WAVEFORMS OF SYSTEM CONTROL AND SERVO STAGE

NO	WAVEFORM	NOTE	NO	WAVEFORM	NOTE	NO	WAVEFORM	NOTE
(A)		(7.159 MHz)	(B)		REC/P.B	(C)		REC CTL
(D)			(E)			(F)		
(G)			(H)		"F" = SP : 1080 LP : 540 SLP : 360			
(J)			(M)			(O)		
(K)			(N)			(P)		
(L)						(Q)		
(R)								
(S)								
(T)								
(U)								
(V)								
(W)								


SYSTEM CONTROL AND SERVO CHECKING PROCEDURE

SYMPTOM	FLOW OF TROUBLESHOOT →						
Dead or Malfunctions	CHECK POINT	Pin74 (VDD5V)	Ⓐ	Pin20 NORMAL [Ⓗ]	Pin17 (SCK)	Ⓐ ~ Ⓓ	* NOTE2
	IF NO.	↓	↓	↓	↓	↓	
	CHANGE	Power	X6201	Q6006	IC6001	* NOTE1	

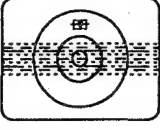
* NOTE1 : Adjust Gear Phase.
* NOTE2 : Check Power Circuit.

SYMPTOM	FLOW OF TROUBLESHOOT →						
NO PLAY	CHECK POINT	Ⓐ ~ Ⓓ	Ⓕ	Ⓑ			
	IF NO.	↓	↓	↓			
	CHANGE	* NOTE1	* NOTE2	* NOTE3			

* NOTE1 : Adjust Gear Phase.
* NOTE2 : IC2601 (Cyl Drive) or Cylinder U.
* NOTE3 : IC2501 or IC2502 (Cap Drive) or Reel Sensor.

SYMPTOM	FLOW OF TROUBLESHOOT →						
Distorted Playback Pix (1) 	CHECK POINT	Ⓓ	Ⓕ	* NOTE3	* NOTE5		
	IF NO.	↓	↓	↓			
	CHANGE	* NOTE1	* NOTE2	* NOTE4			

* NOTE1 : Check Video Circuit.
* NOTE2 : IC2601 (Cyl Drive) or Cylinder U.
* NOTE3 : Open pin 7 of IC2601 and apply external 2.5V DC to pin 7.
* NOTE4 : If the picture is still the same, change IC2601 or Cylinder U.
* NOTE5 : If the picture is improved, change IC6001 or IC6201.

SYMPTOM	FLOW OF TROUBLESHOOT →						
Distorted Playback Pix (2)  (Periodic Noise bar)	CHECK POINT	Ⓒ	Ⓗ	* NOTE3	* NOTE5		
	IF NO.	↓	↓	↓			
	CHANGE	* NOTE1	* NOTE2	* NOTE4			

* NOTE1 : Check tape travel and clean A/C head.
* NOTE2 : Check FG Head.
* NOTE3 : Open pin 15 of IC2501 and apply external 2.5V DC to pin 15.
* NOTE4 : If the picture is still the same, change IC2501,2502 or Capstan Motor.
* NOTE5 : If the picture is improved, change IC6001 or IC6201.

TIMING CHART 3

ACTION	PLAY/REC(CYL ON)	PLAY/REC(CYL OFF)
POSITION	9	9
TIME ms*	2S 4S	2S 2S
CAPSTAN ON(H) (PIN 37)	3A-1	3B-2
CAP REV(H)/STOP(M)/FWD(L) (PIN 40)	M L	M L
CYLINDER ON(L)		3B-1
VIDEO D. REC(H) (PIN 34)	REC	REC
VIDEO EE(H) (PIN 12)	PLAY	PLAY
AUDIO MUTE(H) (PIN 6)	PLAY	PLAY

NOTE: 1) PIN NO. WITH BRACKET INDICATES PIN NO. OF IC6001.
2) *:IT SHOWS MAXIMUM TIME.

MODE BY MODE OPERATION

3. PLAY/REC

3A. CYLINDER ON

3A-1. The Capstan Motor starts rotation in a forward direction for REC/PLAY.

3B. CYLINDER OFF

3B-1. The Cylinder Motor starts rotation for quick play.

3B-2. 2 seconds later, Cylinder Motor rotation is stabilized and the Capstan Motor starts rotation in a forward direction.

TIMING CHART 5

ACTION	REV	PLAY
POSITION	9 8 7 6 5	6 7 8 9
TIME ms*	100 1.5S 100 1.5S 400 1S 100 600	1S 100 1.5S 100 1S
LOADING FWD(H) (PIN 11)		5B-1 5B-2 5B-4
LOADING REV(H) (PIN 10)	5A-1	
CAPSTAN ON(H) (PIN 37)		
CAP REV(H)/STOP(M)/FWD(L) (PIN 40)	L 5A-3 H	5B-3 L
CYLINDER ON(L)		
AUDIO MUTE(H) (PIN 6)		

NOTE: 1) PIN NO. WITH BRACKET INDICATES PIN NO. OF IC6001.
2) *:IT SHOWS MAXIMUM TIME.

MODE BY MODE OPERATION

5. REVIEW

5A. PLAY TO REVIEW

5A-1. The Loading Motor starts rotation in a reverse direction.

5A-2. Just after the Pressure Roller and the Tension Arm are released, the Loading Motor stops.

5A-3. While the Loading Motor is stopped, the Capstan Motor changes its direction to reverse.

5A-4. When the Mode Switch reaches position 5, the Loading Fwd(H) signal goes HIGH to apply a brake to the Loading Motor. The Pressure Roller is applied to the Capstan Shaft.

5B. REVIEW TO PLAY

5B-1. The Loading Motor starts rotation in a forward direction.

5B-2. Apply a brake to the Loading Motor.

5B-3. While the Loading Motor is stopped, the Capstan Motor changes its direction to forward.

5B-4. When the Mode Switch reaches position 9, the Loading Motor stops.

TIMING CHART 4

ACTION	PLAY/REC (IN STBY POSITION)
POSITION	7 8 9
TIME ms*	2S 1.5S 100 2S
LOADING FWD(H) (PIN 11)	4-2 4-4
LOADING REV(H) (PIN 10)	
CAPSTAN ON(H) (PIN 37)	4-3
CAP REV(H)/STOP(M)/FWD(L) (PIN 40)	M L M L
CYLINDER ON(L)	4-1
VIDEO D. REC(H) (PIN 34)	REC
VIDEO EE(H) (PIN 12)	PLAY
AUDIO MUTE(H) (PIN 6)	PLAY

NOTE: 1) PIN NO. WITH BRACKET INDICATES PIN NO. OF IC6001.
2) *:IT SHOWS MAXIMUM TIME.

MODE BY MODE OPERATION

4. PLAY/REC(FROM STANDBY POSITION)

4-1. The Cylinder Motor starts rotation for quick play.

4-2. The Loading Motor starts rotation in a forward direction.

4-3. The Idler Gear swings over to Takeup Reel.

4-4. When the Mode Switch reaches position 9, the Loading Rev(H) signal goes HIGH to apply a brake to the Loading Motor. Then the Loading Motor stops quickly.

TIMING CHART 6

ACTION	STOP	10 MINUTES	30 MINUTES
POSITION	9		8 7
TIME ms*	0.7s 300		2s 100
LOADING FWD(H) (PIN 11)			6-4
LOADING REV(H) (PIN 10)			6-3
CAPSTAN ON(H) (PIN 37)			
CAP REV(H)/STOP(M)/FWD(L) (PIN 40)	M H M		
CYLINDER ON(L)			6-2
AUDIO MUTE(H) (PIN 6)			

NOTE: 1) PIN NO. WITH BRACKET INDICATES PIN NO. OF IC6001.
2) *:IT SHOWS MAXIMUM TIME.

MODE BY MODE OPERATION

6. PLAY TO STOP/AFTER 10 MINUTES/AFTER 30 MINUTES

6-1. The Capstan Motor rotates a little in reverse direction to reduce the tape tension.

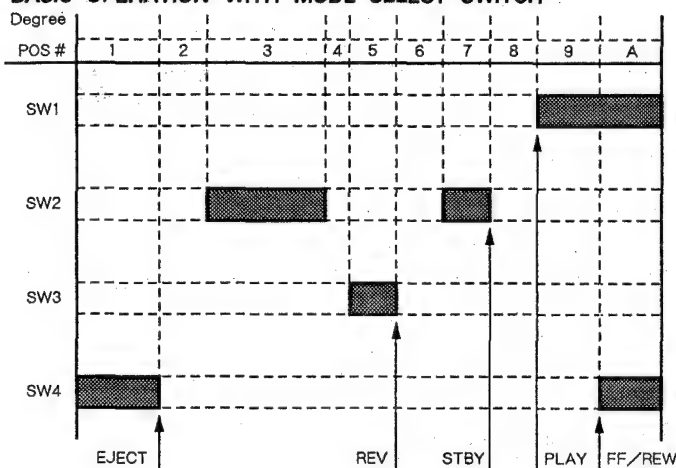
6-2. After 10 minutes, the Cylinder stops.

6-3. After 30 minutes, the Mechanism changes the position to 7(Standby).

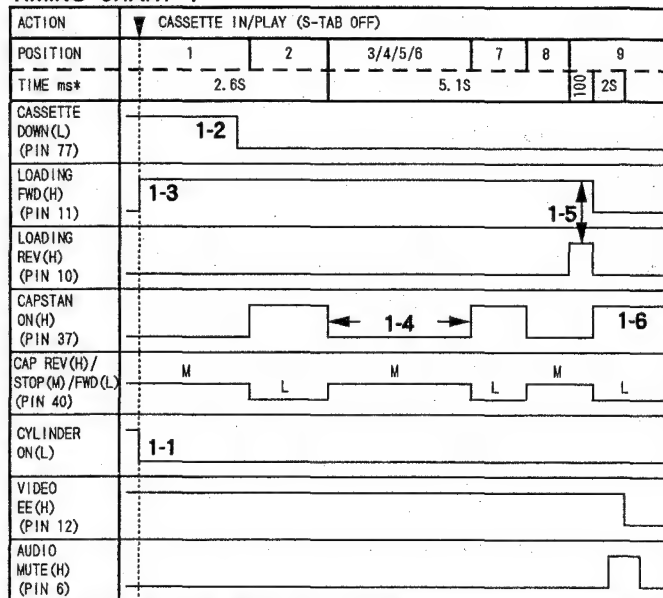
6-4. At this position, the Pressure Roller and the Tension Arm are released to reduce the tape tension.

TIMING CHART

BASIC OPERATION WITH MODE SELECT SWITCH



TIMING CHART 1



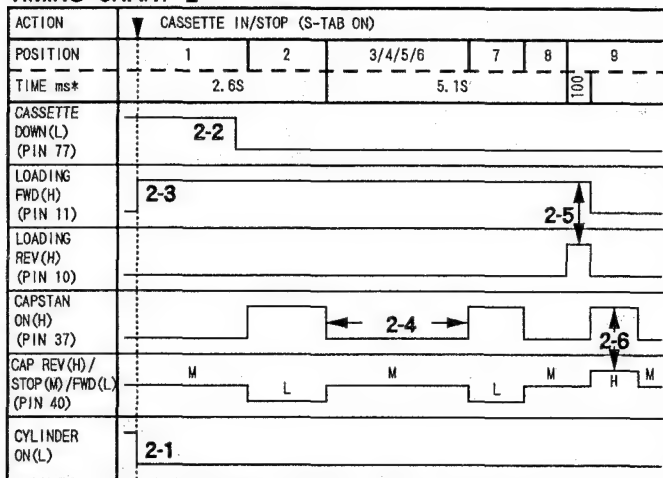
NOTE: 1) PIN NO. WITH BRACKET INDICATES PIN NO. OF IC6001.
2) *:IT SHOWS MAXIMUM TIME.

MODE BY MODE OPERATION

1. CASSETTE IN/PLAY (WITHOUT SAFETY TAB)

- 1-1. The Cylinder starts rotation for quick play.
- 1-2. The Cassette Down(L) signal goes LOW.
(If the Cassette Down(L) signal does not go LOW even at position 2, the unit ejects the tape.)
- 1-3. The Loading Motor starts rotation in a forward direction.
- 1-4. 1)The Play idler returns to center.
2)The Idler Gear swings over to Takeup Reel.
- 1-5. When the Mode Switch reaches position 9, the Loading Rev(H) signal goes HIGH to apply a brake to the Loading Motor.
Then the Loading Motor stops.
- 1-6. Starts playback.

TIMING CHART 2



NOTE: 1) PIN NO. WITH BRACKET INDICATES PIN NO. OF IC6001.
2) *:IT SHOWS MAXIMUM TIME.

MODE BY MODE OPERATION

2. CASSETTE IN/STOP (WITH SAFETY TAB)

- 2-1 thru 2-5 are the same as 1-1 thru 1-5 of Timing Chart 1(without safety tab).
- 2-6. The Capstan Motor rotates a little in reverse direction to reduce the tape tension.

ACTION	FF/REW (CYL ON)						FF/REW (CYL OFF)			
POSITION	9		A				9		A	
TIME ms*	1.5S	100	400	200			2S	1.5S	100	
LOADING FWD(H) (PIN 11)										
LOADING REV(H) (PIN 10)										
CAPSTAN ON(H) (PIN 37)										
CAP REV (H) / STOP (M) / FWD (L) (PIN 40)										
CYLINDER ON (L)										
FF/REW (L)										

7B-1. The Cylinder Motor starts rotation.
7B-2/7B-3/7B-4, these are the same as that of 7A-1 thru 7A-3.

ACTION	EJECT		EJECT					
POSITION	9/8	7	6/5/4	3/2	1			
TIME ms*	7S				200	4S	40	100
CASSETTE DOWN (L) (PIN 77)								
LOADING FWD (H) (PIN 11)								
LOADING REV (H) (PIN 10)								
CAPSTAN ON (H) (PIN 37)								
CAP REV (H)/ STOP (M)/FWD (L) (PIN 40)								
CYLINDER ON (L)								

- 9-1. Unloads the mechanism to the Eject position(I).
- 9-2. The Idler Gear swings over to Supply Reel.
- 9-3. The Capstan Motor rotates in reverse direction to takeup a tape slack.
- 9-4. The Cassette Down(L) signal goes HIGH.
- 9-5. When the Mode Switch reaches position 1, the Cylinder stops.
- 9-6. The Loading Motor stops.
- 9-7. The Idler Gear is released from Supply Reel.

ACTION FF/REW (STBY) STOP

POSITION 7 8/8 A 9/8 7 8 9

TIME ms* 2S 2.6S 100 400 200 200 2.6S 250 1.5S 100

LOADING FWD (H) (PIN 11) 8A-2 8A-3 8B-5 8B-3 8B-6

LOADING REV (H) (PIN 10) 8B-2

CAPSTAN ON (H) (PIN 37) 8A-4 8B-4 8B-1 8B-7

CAP REV (H) / STOP (M) / FWD (L) (PIN 40) M H REW FF M L M H M

CYLINDER ON (L) 8A-1

FF/REW (L)

- 8A-1. The Cylinder Motor starts rotation.
- 8A-2. Changes the mechanism position to A (FF/REW) to release the
- /8A-3. Pressure Roller and the Tension Arm.
- 8A-4. The Capstan Motor starts rotation for FF/REW. During FF/REW, the Cylinder keeps rotation to prevent a tape damage.
- 8B. FF/REW TO STOP
 - 8B-1. Apply a brake to the Capstan Motor for quick stop.
 - 8B-2. Changes the mechanism position to 7 to release the Pressure
 - /8B-3. Roller and the Tension Arm.
 - 8B-4. The Idler Gear swings over to Takeup Reel.
 - 8B-5. Changes the mechanism position to 9 (PLAY POSITION).
 - /8B-6.
 - 8B-7. The Capstan Motor rotates a little in reverse direction to reduce the tape tension.

ACTION	PAUSE	PAUSE RELEASE									
POSITION	9 8 7 8 9 8 7 8 9										
TIME ms*	400 2S 300 2S 100 3.5S 2S 100 2S 100 1.2S 1.5S										
LOADING FWD(H) (PIN 11)											
LOADING REV(H) (PIN 10)											
CAPSTAN ON(H) (PIN 37)											
CAP REV(H) / STOP(M) / FWD(L) (PIN 40)											
CYLINDER ON(L)											
VIDEO D. REC(H) (PIN 34)											

- 10A. REC TO REC PAUSE/REC PAUSE TO REC
 - 10A-1. REC TO REC PAUSE
 - /10A-2.
 - 10A-3. The Idler Gear swings over to Supply Reel.
 - 10A-4. Changes the mechanism position to 9(PLAY POSITION).
 - /10A-5.
 - 10A-6. Rewind the tape for 3.5 sec(SP)/1.8 sec(LP)/1.23 sec(SLP).
 - 10A-7. Changes the mechanism position to 7(STANDBY).
 - /10A-8.
 - 10A-9. The Idler Gear swings over to Takeup Reel.
 - 10A-10. Changes the mechanism position to 9(PLAY POSITION).
 - /10A-11.
 - 10A-12. Playback the tape for 1.2 seconds to adjust add-on recording portion.
- 10B. REC PAUSE TO REC
 - 10B-1. The Capstan Motor starts rotation in forward direction for playback. (The video recording will be activated with the Video Delay Rec(H) signal.)

The schematic diagram illustrates a video decoder circuit, centered around the IC8501. The circuit is powered by a +5V supply and includes a BLACK LEVEL reference.

Inputs:

- VIDEO:** (FROM VIDEO) input, connected to PIN 9 of P8501, which is then connected to FL8502 LPF.
- H-SYNC:** (FROM VIDEO) input, connected to PIN 2 of P8501, which is then connected to FL8504 LPF.

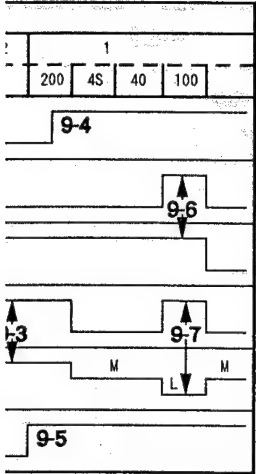
IC8501 Internal Blocks and Connections:

- Q8501 BUFFER:** Receives the output of FL8502 LPF and connects to PIN 11 of IC8501.
- 600kHz LPF:** Consists of components R8518, C8511, and C8512, connected to PIN 11 of IC8501.
- CLAMP:** Receives input from PIN 11 and connects to PIN 12 of IC8501.
- DATA SLICER:** Receives input from CLAMP and connects to PIN 11 of IC8501.
- SYNC SLICER:** Receives input from CLAMP and connects to PIN 12 of IC8501.
- VERTICAL COUNTER:** Receives input from SYNC SLICER and connects to PIN 12 of IC8501.
- HORIZONTAL COUNTER:** Receives input from VERTICAL COUNTER and connects to PIN 12 of IC8501.
- PHASE / FREQUENCY DETECTOR:** Receives input from FL8504 LPF and connects to PIN 8 of IC8501.
- LOOP FILTER:** Receives input from PHASE / FREQUENCY DETECTOR and connects to PIN 13 of IC8501.
- VCO:** Receives input from LOOP FILTER and connects to PIN 13 of IC8501.
- DATA CLOCK:** Receives input from DATA SLICER and connects to PIN 11 of IC8501.
- TIMING CLOCK:** Receives input from HORIZONTAL COUNTER and connects to PIN 13 of IC8501.
- DECODER:** Receives input from DATA SLICER and connects to PIN 11 of IC8501.

Outputs and Power:

- CTL:** Output from PIN 16 of IC8501, connected to a +5V supply and a diode.
- DECT (1):** Output from PIN 16 of IC8501, connected to a diode.
- Power:** A +5V supply is connected to PIN 1 of IC8501 and PIN 16 of IC8501. A BLACK LEVEL reference is connected to PIN 3 of IC8501.

CCV(CLOSED CAPTION VIDEO DECODER) BLOCK DIAGRAM

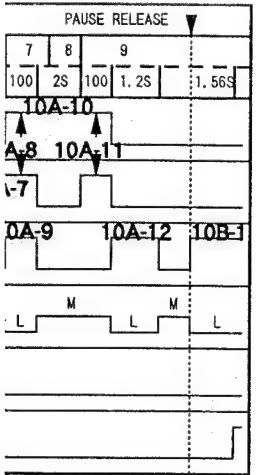


1. OF IC6001.

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pl.
ection to takeup a tape

the Cylinder stops.

heel.



2. OF IC6001.

7(STANDBY).

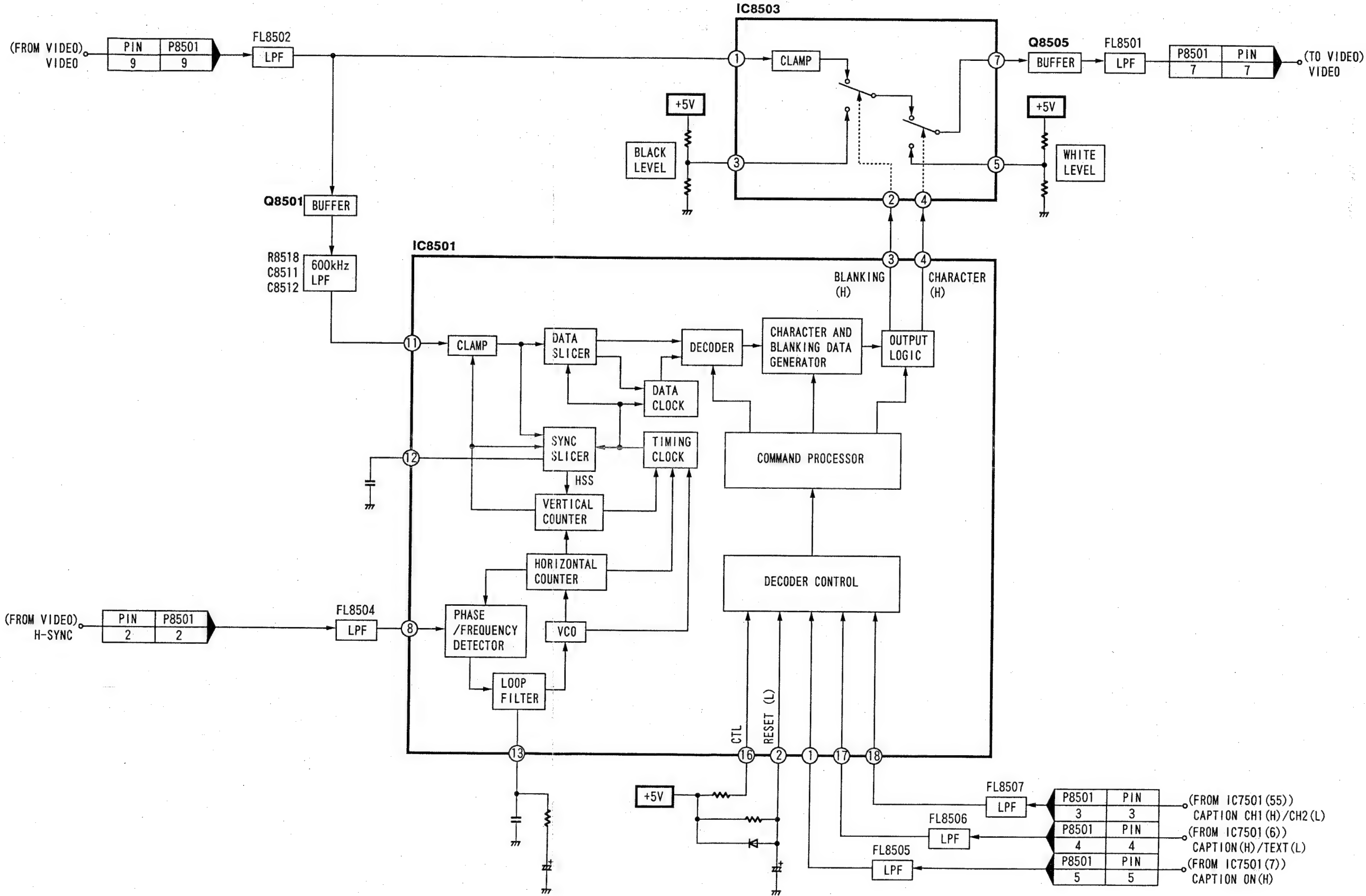
ply Reel.
9(PLAY POSITION).

.8 sec(LP)/1.23 sec(SLP).
7(STANDBY).

oup Reel.
o 9(PLAY POSITION).

s to adjust add-on

in forward direction for
11 be activated with the



TIMING CHART 7

ACTION	FF/REW (CYL ON)	FF/REW (CYL OFF)
POSITION	9	A
TIME ms*	1.5S 100 400 200	2S 1.5S 100
LOADING FWD(H) (PIN 11)	7A-1	7B-2
LOADING REV(H) (PIN 10)	7A-2	7B-3
CAPSTAN ON(H) (PIN 37)	7A-3	7B-4
CAP REV(H)/STOP(M)/FWD(L) (PIN 40)	M H REW	M H REW
CYLINDER ON(L)		7B-1
FF/REW(L)		

NOTE: 1) PIN NO. WITH BRACKET INDICATES PIN NO. OF IC6001.
2) *:IT SHOWS MAXIMUM TIME.

MODE BY MODE OPERATION

7. STOP TO FF/REW

7A. CYLINDER ON

7A-1. Changes the mechanism position to A(FF/REW) to release the /7A-2. Pressure Roller and the Tension Arm.
7A-3. The Capstan Motor starts rotation for FF/REW. During FF/REW, the Cylinder keeps rotation to prevent a tape damage.

7B. CYLINDER OFF

7B-1. The Cylinder Motor starts rotation.
7B-2/7B-3/7B-4, these are the same as that of 7A-1 thru 7A-3.

TIMING CHART 9

ACTION	EJECT	EJECT
POSITION	9/8	7 6/5/4 3/2 1
TIME ms*	7S	200 4S 40 100
CASSETTE DOWN(L) (PIN 77)		9-4
LOADING FWD(H) (PIN 11)		9-6
LOADING REV(H) (PIN 10)		
CAPSTAN ON(H) (PIN 37)	9-1	
CAP REV(H)/STOP(M)/FWD(L) (PIN 40)	M H	M H
CYLINDER ON(L)		9-5

NOTE: 1) PIN NO. WITH BRACKET INDICATES PIN NO. OF IC6001.
2) *:IT SHOWS MAXIMUM TIME.

MODE BY MODE OPERATION

9. STOP TO EJECT

9-1. Unloads the mechanism to the Eject position(I).
9-2. The Idler Gear swings over to Supply Reel.
9-3. The Capstan Motor rotates in reverse direction to take up a tape slack.
9-4. The Cassette Down(L) signal goes HIGH.
9-5. When the Mode Switch reaches position 1, the Cylinder stops.
9-6. The Loading Motor stops.
9-7. The Idler Gear is released from Supply Reel.

TIMING CHART 8

ACTION	FF/REW (STBY)	STOP
POSITION	7 8/9	A 9/8 7 8 9
TIME ms*	2S 2.6S 100 400 200	200 2.6S 250 1.5S 100
LOADING FWD(H) (PIN 11)	8A-2	8B-5
LOADING REV(H) (PIN 10)	8A-3	8B-3 8B-6
CAPSTAN ON(H) (PIN 37)	8A-4	8B-4
CAP REV(H)/STOP(M)/FWD(L) (PIN 40)	M H REW	M H REW
CYLINDER ON(L)	8A-1	
FF/REW(L)		

NOTE: 1) PIN NO. WITH BRACKET INDICATES PIN NO. OF IC6001.
2) *:IT SHOWS MAXIMUM TIME.

MODE BY MODE OPERATION

8. STOP TO FF/REW(FROM STANDBY POSITION)

8A. STOP(STANDBY) TO FF/REW

8A-1. The Cylinder Motor starts rotation.
8A-2. Changes the mechanism position to A(FF/REW) to release the /8A-3. Pressure Roller and the Tension Arm.
8A-4. The Capstan Motor starts rotation for FF/REW. During FF/REW, the Cylinder keeps rotation to prevent a tape damage.

8B. FF/REW TO STOP

8B-1. Apply a brake to the Capstan Motor for quick stop.
8B-2. Changes the mechanism position to 7 to release the Pressure /8B-3. Roller and the Tension Arm.
8B-4. The Idler Gear swings over to Takeup Reel.
8B-5. Changes the mechanism position to 9(PLAY POSITION).
8B-6.
8B-7. The Capstan Motor rotates a little in reverse direction to reduce the tape tension.

TIMING CHART 10

ACTION	PAUSE	PAUSE RELEASE
POSITION	9 8 7 8 9	9 8 7 8 9
TIME ms*	400 2S 300 2S 100 3.5S 2S 100 2S 100 1.2S 1.56S	
LOADING FWD(H) (PIN 11)	10A-4	10A-10
LOADING REV(H) (PIN 10)	10A-2 10A-5	10A-8 10A-11
CAPSTAN ON(H) (PIN 37)	10A-3	10A-9 10A-12 10B-1
CAP REV(H)/STOP(M)/FWD(L) (PIN 40)	M H	M H
CYLINDER ON(L)		
VIDEO D. REC(H) (PIN 34)		

NOTE: 1) PIN NO. WITH BRACKET INDICATES PIN NO. OF IC6001.
2) *:IT SHOWS MAXIMUM TIME.

MODE BY MODE OPERATION

10. REC TO REC PAUSE/REC PAUSE TO REC

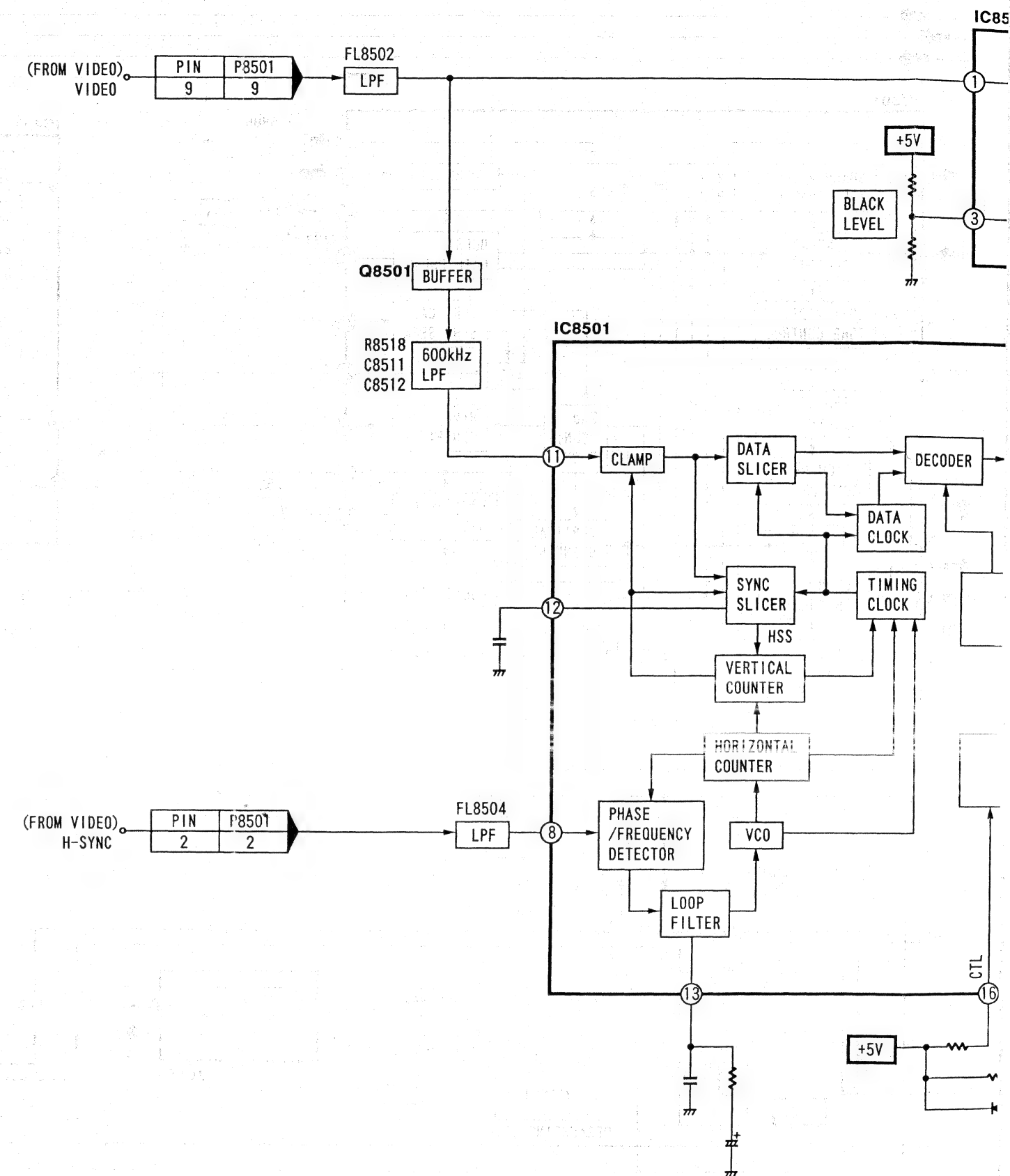
10A. REC TO REC PAUSE

10A-1. Changes the mechanism position to 7(STANDBY).
/10A-2.
10A-3. The Idler Gear swings over to Supply Reel.
10A-4. Changes the mechanism position to 9(PLAY POSITION).
/10A-5.
10A-6. Rewind the tape for 3.5 sec(SP)/1.8 sec(LP)/1.23 sec(SLP).
10A-7. Changes the mechanism position to 7(STANDBY).
/10A-8.
10A-9. The Idler Gear swings over to Takeup Reel.
10A-10. Changes the mechanism position to 9(PLAY POSITION).
/10A-11.
10A-12. Playback the tape for 1.2 seconds to adjust add-on recording portion.

10B. REC PAUSE TO REC

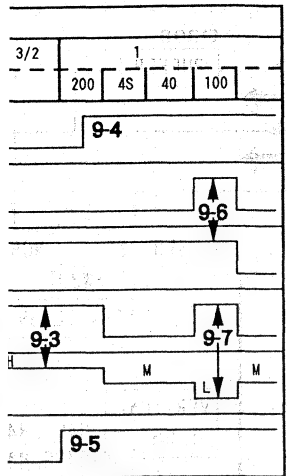
10B-1. The Capstan Motor starts rotation in forward direction for playback. (The video recording will be activated with the Video Delay Rec(H) signal.)

CCV(CLOSED CAPTION VIDEO DECODER) BLOCK DIAGRAM

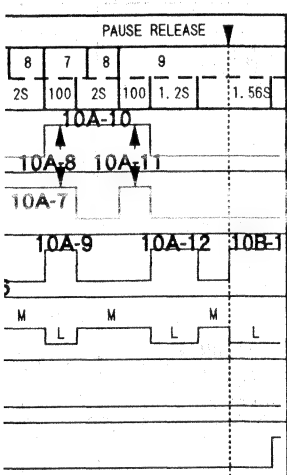


CCV(CLOSED CAPTION VIDEO DECODER) BLOCK DIAGRAM

TV MAIN BLOCK DIAGRAM

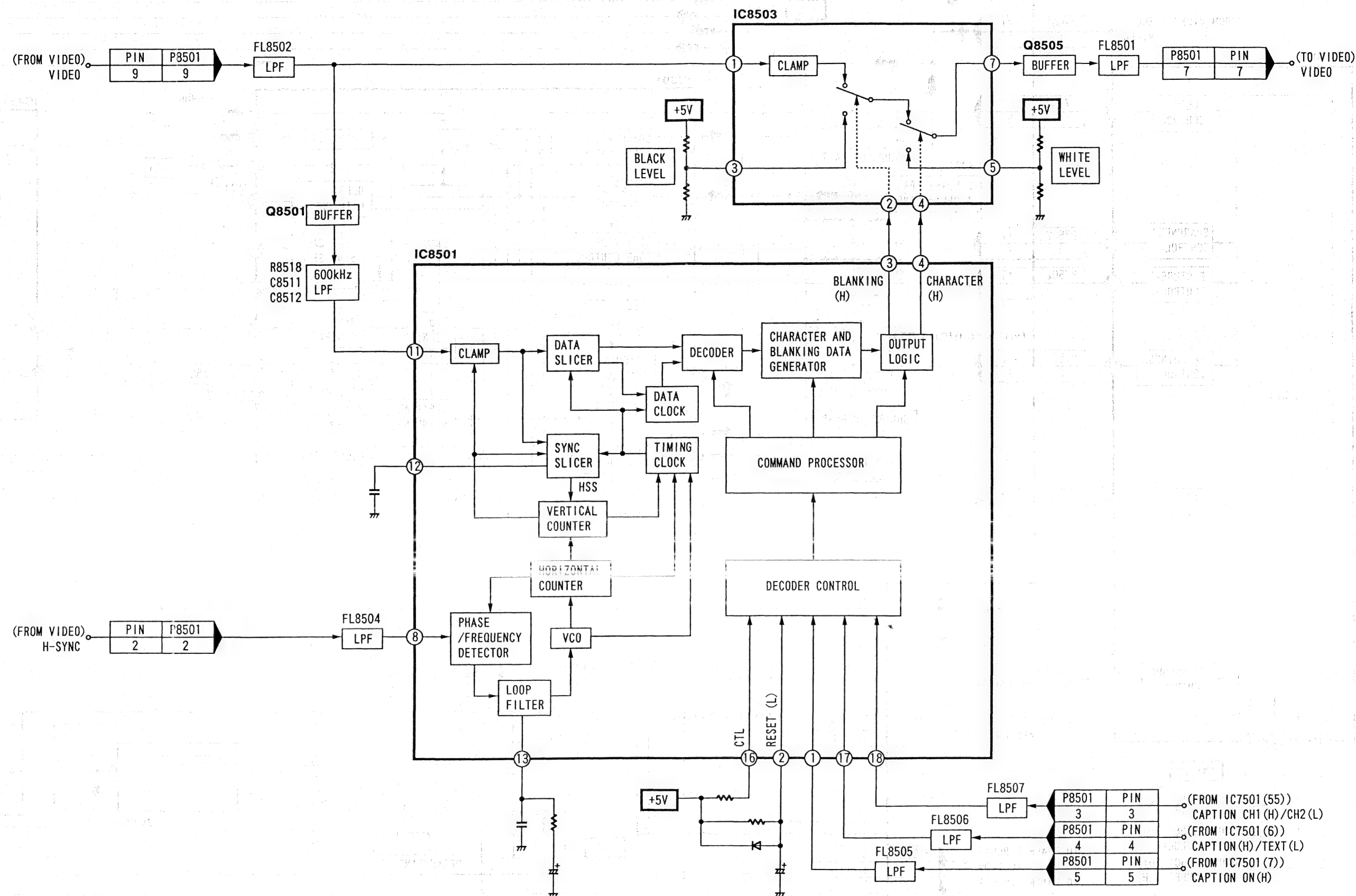


osition(1).
Reel.
direction to takeup a tape
in 1, the Cylinder stops.
ly Reel.



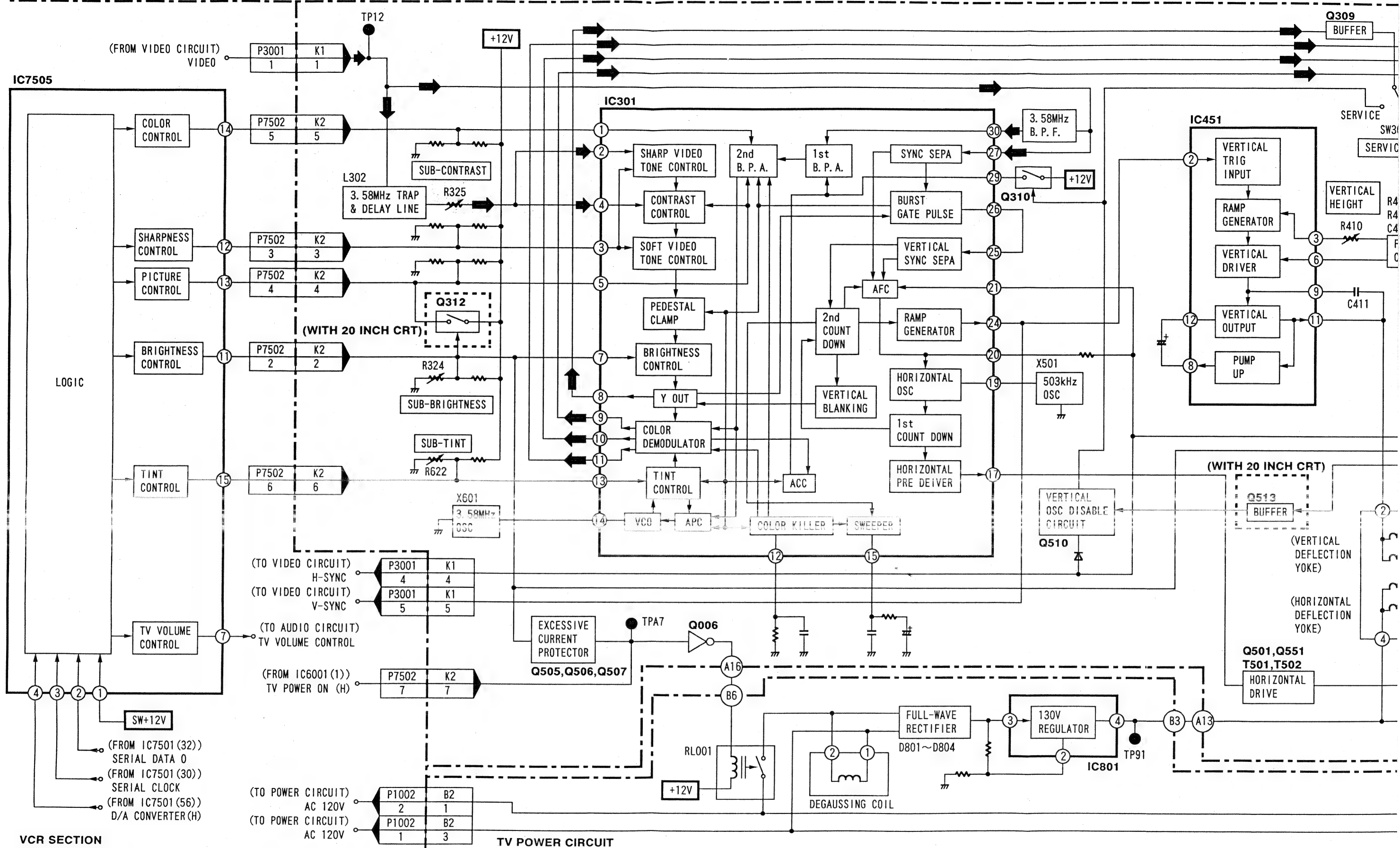
on to 7(STANDBY).
o Supply Reel.
on to 9(PLAY POSITION).
SP)/1.8 sec(LP)/1.23 sec(SLP).
on to 7(STANDBY).
o Takeup Reel.
ion to 9(PLAY POSITION).
seconds to adjust add-on

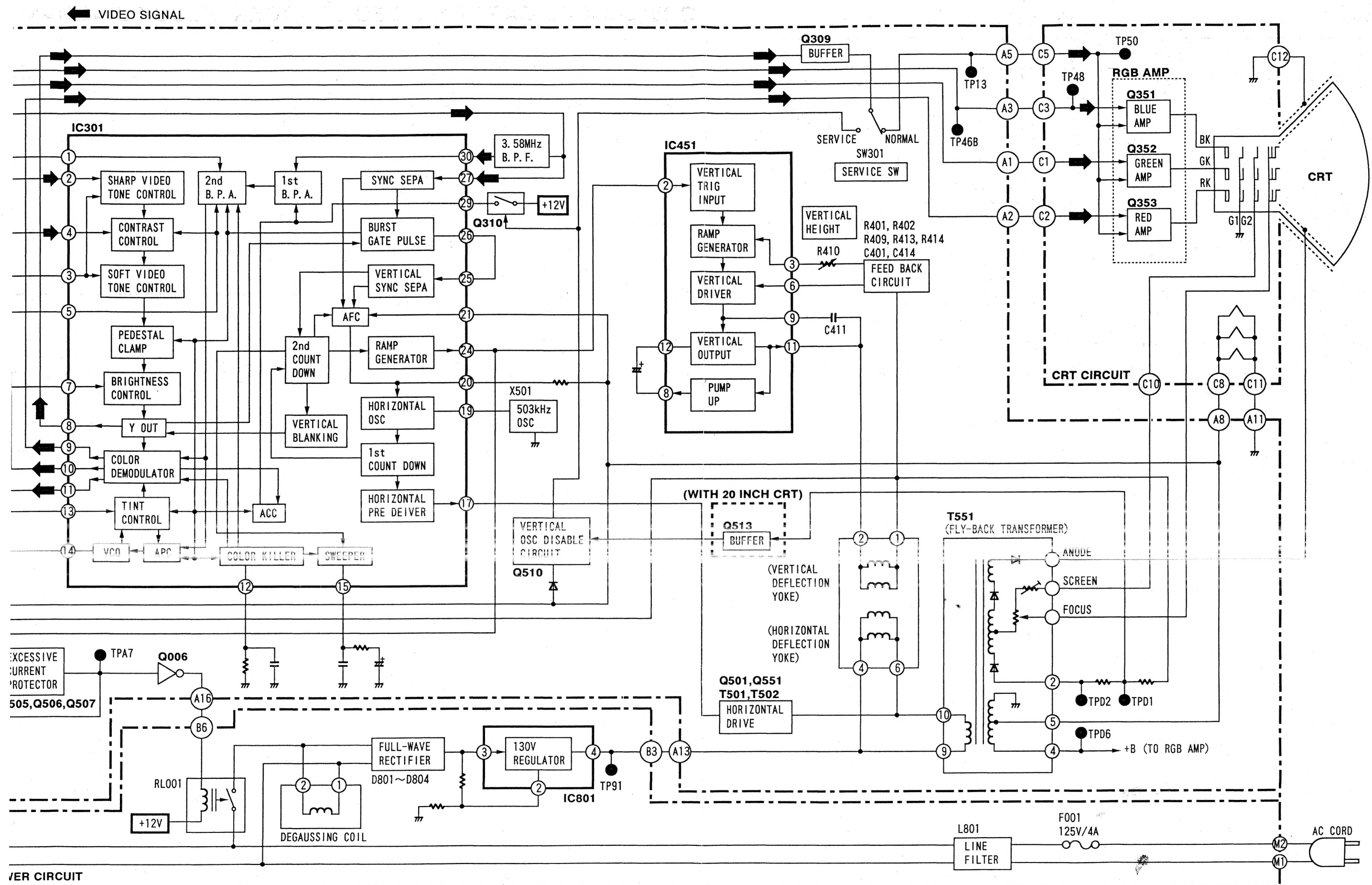
ation in forward direction for
ng will be activated with the



TV MAIN BLOCK DIAGRAM

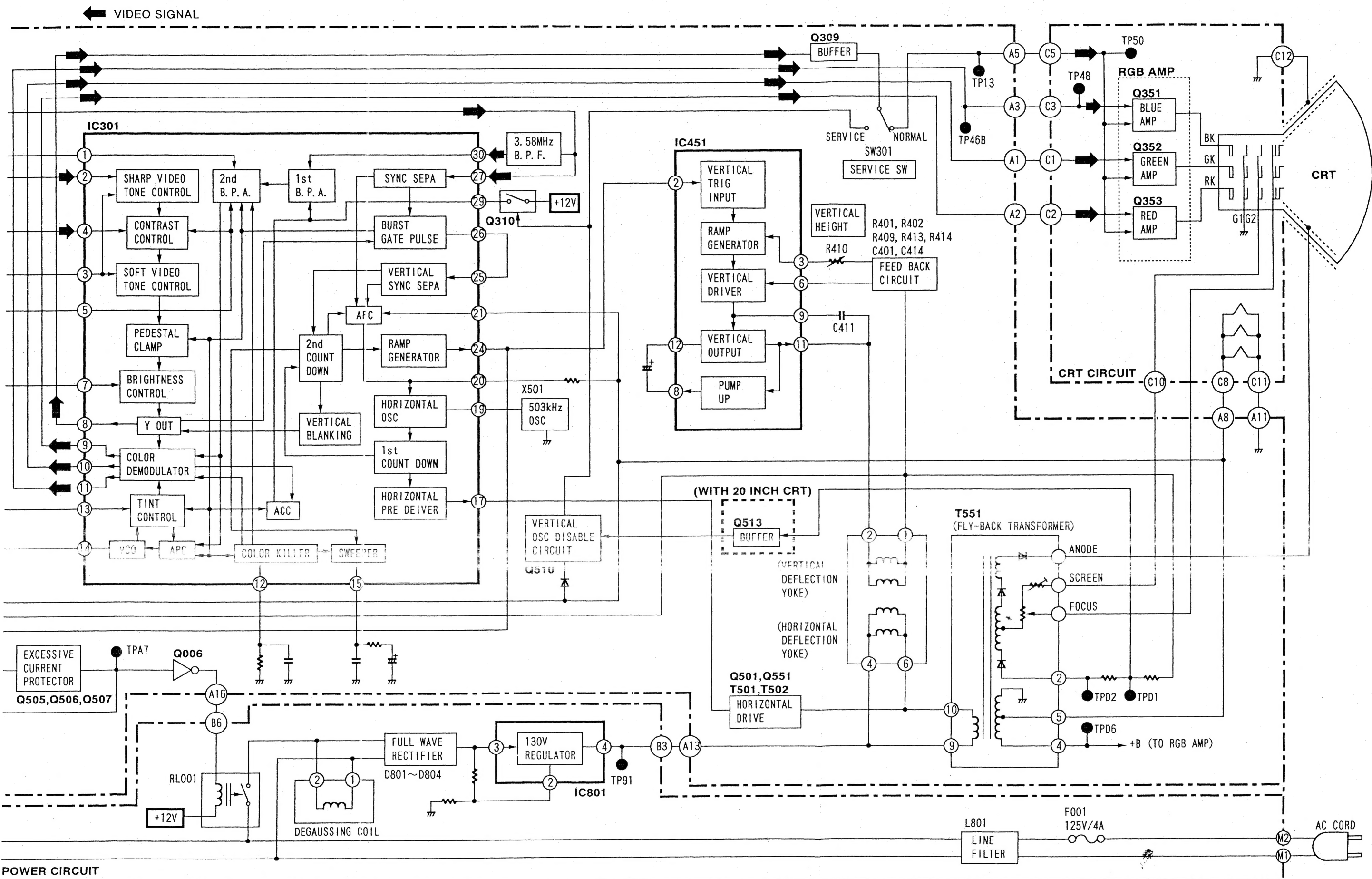
← VIDEO SIGNAL





← VIDEO SIGNAL





TIMER/OPERATION BLOCK DIAGRAM

